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Biological & Medical Serials

No. 3. September, 1918. Vol. XXXI.

Biological & Medical Serials

Journal

OF THE

STORAGE

Royal Army Medical Corps

EDITED BY

COLONEL SIR WILLIAM H. HORROCKS, K.C.M.G., C.B.

ASSISTED BY

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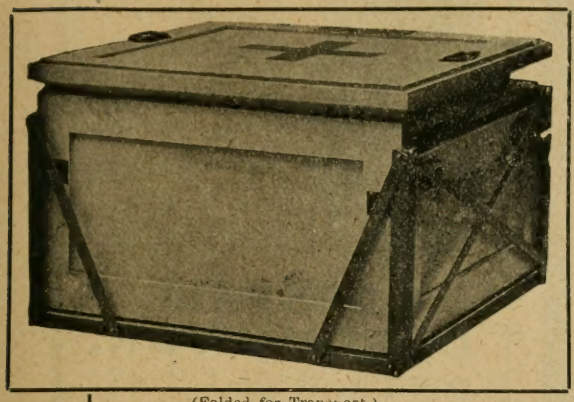

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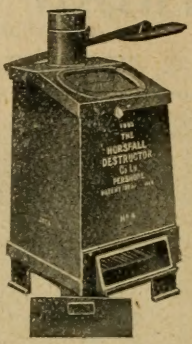

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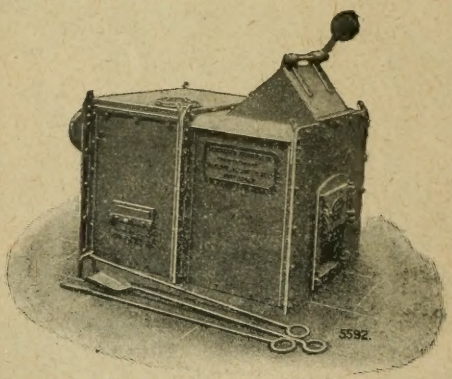

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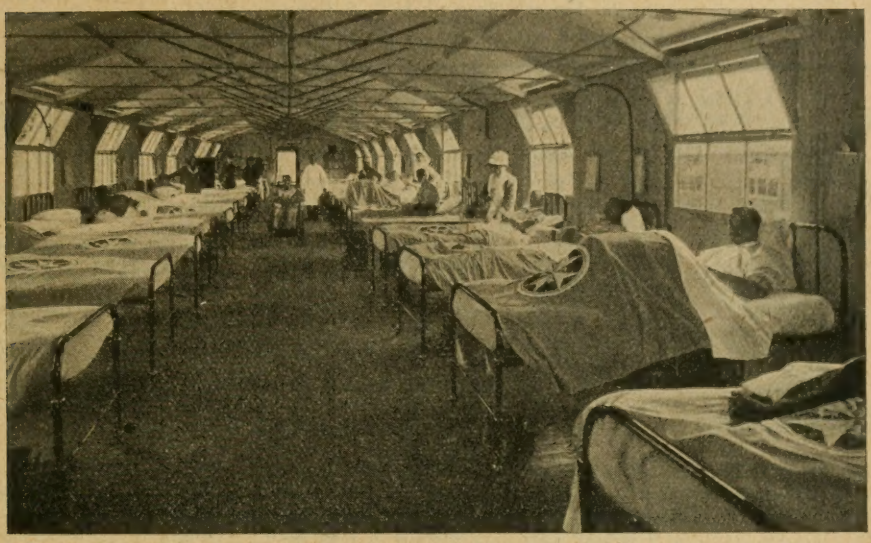

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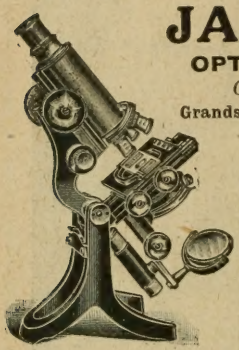

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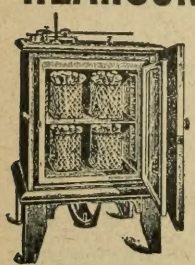

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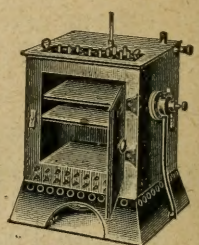

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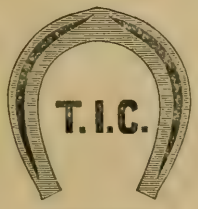

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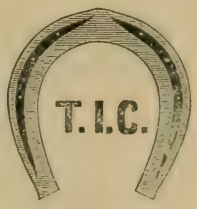

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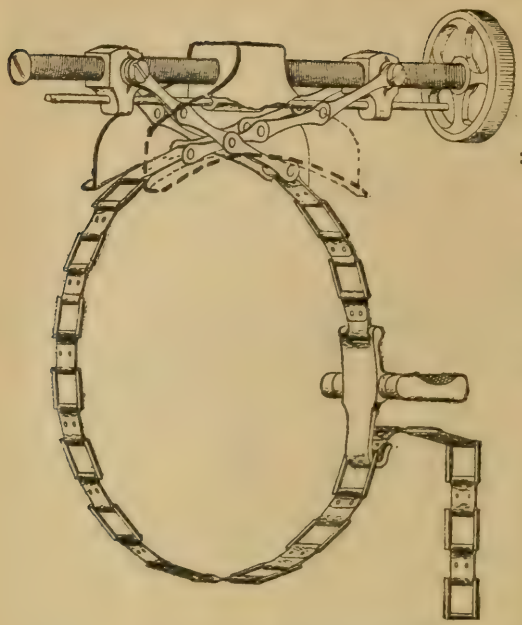

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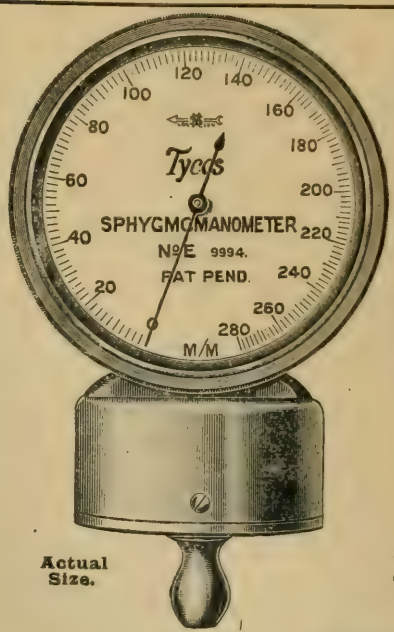

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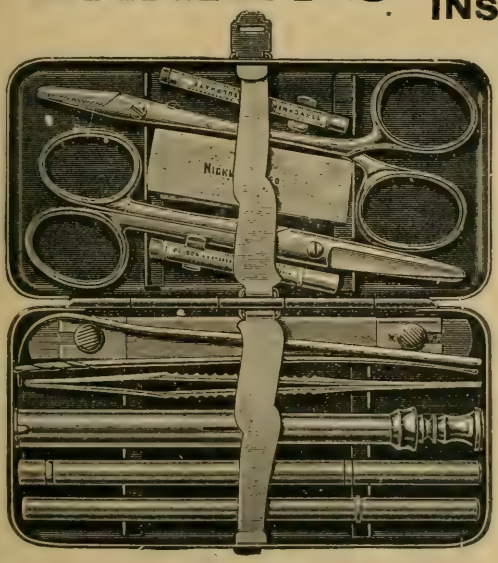

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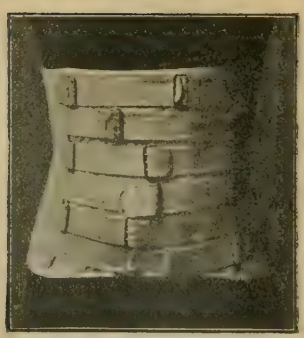

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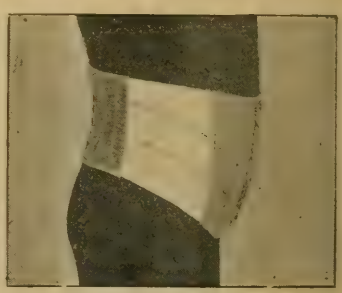

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Face first matter

VOLUME XXXI. SEPTEMBER, 1918. No. 3.

Journal of the Royal Army Medical Corps.

Original Communications.

PENETRATING WOUNDS OF THE CHEST.

BY CAPTAIN R. B. BLAIR.
Royal Army Medical Corps.
IN COLLABORATION WITH
MAJOR G. C. SHATTUCK.
Royal Army Medical Corps.

INTRODUCTION.

THE pioneer work in surgery of the chest under war conditions has already been done by Colonels Gray and Gask, of our own service, and by Duval, Courcoux and Gregoire, of the French. By laying down the principle that wounds of the chest require surgical treatment on the same general lines as other wounds, and by demonstrating that intra-thoracic operations can be performed on the recently wounded, with good prospects of marked benefit in suitable cases, they have brought chest surgery into prominence.

In the course of development of this new field of war surgery, many problems have arisen. Indications for operation must be better known, the best technique should be more generally agreed upon, questions of preliminary treatment and of after-care must be settled, the anæsthetic of choice must be determined, and more must be learned of the results of chest wounds, not only in cases that have come to operation, but also in those that have received only medical treatment.

Besides the problems with which the operator is directly concerned, there are those of diagnosis. They are interesting but elusive, because of the complexity of the lesion and the intricacy of signs resulting therefrom. Hence the necessity of co-operation with a radiologist of experience.

The high mortality from penetrating chest wounds in the forward

areas, constitutes at once a challenge to our profession, and an opportunity to save life. The writers above mentioned have shown that wise surgical intervention is destined to become increasingly valuable. Through further knowledge mortality can be lowered to the irreducible minimum, convalescence shortened in a larger proportion of cases, deformity diminished, and functional results improved.

Conditions of Work.

The cases upon which this paper is based were admitted to a casualty clearing station between July 31 and October 1, 1917. The chest surgery had to be subordinated at times to needs deemed more urgent, with the result that operations on the chest were not always performed as early as might have been desirable. As a rule, however, the operation was done promptly when indications for it were clear. Pressure for beds often necessitated too early evacuation of patients (see Table II). The work of examination, observation, and general care of the patients was performed at first by Captain Blankenhorn, U.S.R., and later by Major Shattuck.

It is a pleasure to express thanks to Captain Blankenhorn for his share in the work, and to recognize the services of several other surgeons who helped us out from time to time. Captain O'Neill, the radiologist, was of the greatest service in localizing foreign bodies and in elucidating complex intra-thoracic lesions. To him especially thanks are due.

Material.

Owing to the fact that fighting was almost incessant, and often heavy during August and September, the number of chest wounds admitted during this period was larger than would ordinarily have been the case in a corresponding period.

The time that elapsed between wounding and admission of the patient to the clearing station varied as a rule between six and twenty-four hours. There were exceptions both above and below these figures. The usual time was probably about twelve hours. Our work was based on the firm belief that all wounds of the chest should be considered from the standpoint of sepsis, and that early surgical intervention by eliminating the source of infection would diminish suffering and shorten convalescence.

Operative Technique in General.

Operations on the chest must be performed under the strictest aseptic conditions. Without speed one cannot expect the best results, but the operation should be thoroughly done if the condition of the patient permits.

Gas and oxygen is our anæsthetic of choice. A pre-operative "dope" of morphine $\frac{1}{4}$ grain and atropine $\frac{1}{120}$ grain was given half an hour before the patient was to be removed to the theatre.

Five per cent picric acid in methylated spirit was used to prepare the skin.

As to the site of operation, one is guided by the position of the wound or wounds, and when a missile is lodged in the thorax, largely by the radiologist's findings, the question usually arises whether to perform a thoracotomy through the wound or to choose an uninjured situation.

If the missile is situated in a portion of the lung or pleura accessible through the wound, we believe it is sound to excise the entrance wound, completely removing all injured tissues and bone fragments, and then after changing gloves and instruments to make an incision six inches long through the wound or from either end of it.

The incision is carried down to the bone, the periosteum is incised for a length of at least four inches and separated from the bone with a periosteal elevator. Then four inches of rib are removed with rib shears. The posterior periosteum and parietal pleura should be divided in the mid-line of the space left by the removal of the rib. Observance of this point facilitates closure of the wound afterwards.

The next procedure is to evacuate the hæmothorax. This can be done by turning the patient on his side, but it is safer to mop out the hæmothorax by means of a long roll of gauze introduced on long forceps. Thus can be avoided the danger of a serious fall in blood-pressure, which seems to result occasionally from rolling the patient while the chest is open. An example of what is meant appears in Table V, Case 2.

TABLE V.—Effect of Irrigation on the Blood Pressure.

Case 1.—Shrapnel Wound Chest: Suture of Diaphragm.

	Systolic	Diastolic
Before	120	80
Under	130	75
Lavage	120	80
Closure	105	65
End	80	60

Case 2.—Shrapnel Wound Chest: Shell removed Pleura.

	Systolic	Diastolic
Before	100	55
After	95	45

Averages of three readings.

Case 3.—Shrapnel Wound Chest: Secondary Drainage.

	Systolic	Diastolic
Before	125	50
After	135	45

Case 4.—Shrapnel Wound Chest: Entrance only.

	Systolic	Diastolic
Before	105	70
Resection	120	80
Lavage	115	70
Closure	120	65
End	115	65

Case 5.—Shrapnel Wound Chest: Staphylococcal Infection.

	Systolic	Diastolic
Before	100	50
After	100	55

Averages of three readings.

Case 6.—Gunshot Wound Chest: Suture of Lung.

	Systolic	Diastolic
Before	110	50
After	105	50

Note.—It will be seen that except in the first of these cases, irrigation made practically no difference in the blood pressure.

One of the best retractors for the chest is that of Tuffier. After it has been adjusted the hand is introduced into the thorax to search for the

missile. When the foreign body is embedded in the lung substance, lung-forceps are used to deliver the damaged portion of lung to the wound, so that bone fragments, the missile, and other foreign matter can be removed. The damaged portion of lung is excised, the wound swabbed with spirit, and a small quantity of "bipp" rubbed into it. Then, fine catgut sutures are introduced on a round-bodied needle, with a needle holder.

Finally, the pleural sinus is cleared of all blood-clot, and irrigated or swabbed as clean as possible before closure. In most of our cases, warm saline or Dakin's solution was used for irrigating. In a few cases 1/1,000 flavine solution was employed, and occasionally, after saline irrigation, "bipp" and liquid paraffin mixed in the proportion of ½ ounce to six ounces was introduced. In a small number of cases the cavity and pleural sinus was simply swabbed with gauze wrung out in warm saline, and followed with swabs soaked in spirit.

We believe that when "bipp" is left in the pleural cavity, a marked pleural exudation results, in consequence of which early aspiration is demanded. The swabbing method is probably as efficacious as any other. It has the advantages of simplicity and harmlessness.

The toilet of the pleura completed, the chest is closed in layers, the first layer being a muscle pleural one. When the skin has been sutured, the line of the incision is painted with picric acid solution and a mastisol dressing applied. Over this a thin layer of absorbent cotton-wool and a many-tailed binder are applied. The binder should not be so tight as to prevent expansion of the chest. After twenty-four to forty-eight hours, as a rule, the binder can be removed. One can then examine the chest with much less disturbance to the patient.

When thoracotomy is not done through the wound, for best access to the lung and pleura one commences the incision from the posterior axillary line, and carries it forward at least six inches.

The rest of the operation is followed as in thoracotomy through the wound.

One point requires emphasis, namely, that while intra-thoracic manipulations are not actually being carried out, the opening into the thorax should be closed with a plug of gauze, to minimize disturbance of respiration and of circulation.

The chest theatre, when possible, should adjoin the chest wards, in order to avoid the exposure of the patient before and after operation, which is difficult to prevent entirely in bad weather, when the patient has to be carried outside to and from the theatre.

Type Operations.

(1) *Parietal.*—The parietal operation consists in complete excision of the wound in the parietes, removal of dirt and fragments of clothing and of bone, and trimming of the broken ends of ribs, followed by thin smearing with "bipp" and closure of the wound, if recent enough.

(2) *Thoracotomy.*—The "complete" operation is performed as follows: A large resection of rib is made either through the wound or through an uninjured part. The missile, if large, i.e., approximately ½ by 1 inch or more in size, is removed when accessible; bone fragments, if present, are removed from the lung, the lung wound is sutured if necesary, and these procedures are followed by lavage and closure.

(3) *Drainage.*—Drainage may be primary or secondary. When the infection has become established to a marked degree, primary drainage is usually resorted to. Such cases are usually late arrivals at the clearing station, having probably lain out for many hours or even days, or been detained at a field ambulance on account of their serious condition. Secondary drainage is performed for established infection which resists conservative treatment.

(4) *Lesions of the Diaphragm.*—The diaphragm can be easily reached by making an incision along the line of the sixth rib from the mid-axillary line, as far as the costo-chondral junction. The costal cartilage is divided at least ½ an inch internal (nearer the mid-line) to the costo-chondral junction, care being taken not to injure the subjacent pleura. By dividing the intercostal muscle along the lower border of the rib, and then making traction on the sixth rib upward with a retractor, the intercostal space can be enlarged. Then, after dividing the pleura along the middle of this space, and introducing a retractor of the Tuffier type, one finds easy access to any part of the diaphragm. Through the diaphragm one can reach the track of a missile in the liver. The diaphragm can be readily sutured with catgut, by means of a curved needle and needle-holder. The chest should be closed with a muscle-pleural suture of catgut, and the costal cartilage repaired by one or two sutures of strong gut. The advantage of this operation lies in the fact that the chest wall is replaced in its entirety, and that the post-operative distress which follows rib resection is conspicously absent.

(5) *Subscapular Lesions.*—Frequently there is much damage to the chest-wall, deep under the scapula, and trephining of the scapula is most unsatisfactory. The best method is to displace the scapula from the vertebral border by dividing the rhomboids and serratus magnus with an incision extending the full length of the scapula. It may be necessary to ligate the posterior scapular artery, and to divide the slip of the latissimus dorsi inserted into the angle of the scapula. The scapula can then be moved upward and outward, so as to give access to the chest wall beneath it. The muscles can be sutured afterwards, and little interference with scapular functions ultimately results.

(6) *Exposure of the Pericardium.*—A curved incision is made from the middle of the sternum, along the line of the sixth costal cartilage. The attachment of the rectus abdominis to the sixth costal cartilage is divided, the fibres of the pectoralis are divided and held aside, and the attachment of the intercostal muscles to both borders of the cartilage is separated.

The perichondrium is then separated all around. The costal cartilages are divided as need arises. The internal mammary vessels running obliquely across the space close to the sternum may require to be ligated and divided when the sixth costal cartilage is excised. After the fibres of the triangularis sterni and a layer of fat which indicates the line of pleural reflexion have been hooked aside, the pericardium is exposed, and the pleural sinus can be reached also if necessary. The pericardium is divided to reach a foreign body in the heart wall. The heart wall is repaired with fine catgut, care being taken not to include the endocardium. The pericardial sac is sutured with catgut and the chest closed in layers.

General Indications for Operation.

(1) Lacerated wound of the chest wall.
(2) Dirty or inflamed wounds of the chest wall.
(3) Wounds with comminution of rib or scapula.
(4) Open pneumothorax (sucking wounds).
(5) Retention of a large missile in the parietes or thorax.
(6) Wounds of the diaphragm.
(7) Infection of the pleural cavity.

Indications in Detail.

(1) Lacerated wounds should be excised as above described. With efficient technique, most of them will unite by first intention.

(2) Wounds which are soiled, which contain clothing or shell fragment, or which are surrounded by an area of inflammation, should be completely excised and carefully cleaned.

(3) Comminution of a rib calls for complete excision of the wound and careful removal of bone fragments. If this is not done the wound will suppurate for many weeks, and infection may spread to the pleura.

(4) Open pneumothoraces or "sucking wounds" are undoubtedly the most urgent of all chest cases. They should be closed at the earliest possible moment by skin suture in the ward. An anæsthetic is not required and would be dangerous if the patient is collapsed, as he usually is, on arrival at the clearing station. Closure of these wounds is an essential part of the treatment for recovery from shock. Later, when the patient's condition permits, further operative procedures can be performed as required.

(5) When a large shell fragment is retained either in the parietes or thorax, operation is demanded. In either case the foreign body is removed if accessible, and the chest closed. It is probably unwise to open the thorax to remove shell fragments if not more than $\frac{1}{2}$ inch in diameter, unless it is clear that the missile itself is causing pain. Missiles within the chest probably do not cause pain, unless they lie within the pleural cavity, or in contact with the pleura. Bullets and shrapnel balls should not be followed into the chest, unless there is evidence of sepsis.

(6) Wounds of the diaphragm should be searched for and carefully sutured. The results of closure of these wounds are very satisfactory. The respiration at once becomes steady and is no longer forced.

(7) Demonstrated infection in a large wound or in the chest-fluid was considered a sure indication for operation. When the infection is found early, the wound may be closed after carefully cleaning. In any intrathoracic operation it is probably wiser to close the chest, if only for a day, in order to permit the lung to expand, adhesions to form and the infection to become localized.

Time for Operation.

The best time for operation varies with the nature of the case, and it is quite impossible to lay down any hard-and-fast rule. The sooner the patient can be safely operated on the more hopeful is the prognosis. In many cases one can operate within six or eight hours after admission, in other cases an operation within the first twenty-four hours would involve unjustifiable risk.

Preliminary Treatment.

Few, if any, cases of penetrating chest wounds arrive at the clearing station fit for operation. As a rule the patient is exhausted by the journey and may be suffering also from pain, loss of blood or shock. Often breathing is painful, and pulse and respiration much accelerated, but the general condition good. These cases respond quickly to rest in bed in the most comfortable position, warmth, and morphine enough to relieve the pain. In a few hours they are fit for operation. Another group of cases was characterized by pallor, rapid feeble pulse, shallow respiration and clammy skin. These cases were undressed quickly, wrapped in warm blankets and surrounded with hot-water bottles. The foot of the bed was raised about ten inches, and morphine was used if there was pain or restlessness. Sometimes the heat was supplied by an apparatus intended for giving hot-air baths to patients with nephritis. Believing that rest is most essential for these patients, we never allowed them to be bathed, or made more than the most superficial examination until the patient had rallied.

When, on account of extreme weakness of the pulse, one would like to elevate the foot of the bed, but pulmonary congestion and dyspnœa contraindicate it, the patient must be laid flat by way of compromise. When pulmonary congestion is prominent and the pulse fairly good, the patient should be propped up. The best position for the serious case deserves careful attention, because it may be an important factor in his recovery. Few drugs were used. Glucose and sodium bicarbonate, five per cent of each in water, was given by rectum by the drop method for cases of collapse from shock. Digitalin $\frac{1}{50}$ grain, strophanthin (B. and W.) $\frac{1}{250}$ grain was given intramuscularly when the pulse was weak and rapid from any other cause. Subsequent doses were ordered if indicated after two, four or eight hours. Although the pulse often improved soon after the administra-

tion of the drug, this may have been due to other causes. To promote rest by relieving pain and distress, morphine was given subcutaneously to nearly all cases on admission. For this purpose, $\frac{1}{6}$ grain was sufficient in nearly all cases, and therefore preferable to larger dosage. Excessive doses of morphine have a definitely depressing effect, which shows itself on the following day. Atropine was not used with the morphine by routine, except as a preliminary to operation. It was ordered with morphine both in preliminary and later treatment, when pulmonary œdema was manifested by wheezing and light frothy expectoration. Attacks of pulmonary œdema were frequent in our cases, both on admission and subsequently. They showed a tendency to recur at night. Morphine $\frac{1}{6}$ grain, and atropine $\frac{1}{120}$ to $\frac{1}{100}$ grain generally gave much relief, and sometimes the disappearance of the dyspnœa and wheezing following the subcutaneous administration of these drugs was striking. Atropine was not used for bronchitis, but was of apparent value when the sputum showed the presence of œdema in addition to bronchitis. The interesting pharmacological questions which arise in regard to the atropine cannot be discussed here, but we have reason to believe that the atropine had an important effect which could not have been obtained with morphine alone.

Blood transfusion was resorted to in a number of cases. It proved valuable and might, perhaps, have been used more often to advantage. On the other hand, it was several times observed that the blood had to be allowed to run in very slowly, and that no large amount of blood could be given without causing cardiac embarrassment. Whether this is usual in penetrating chest wounds we do not know, but considering the disturbance of pulmonary circulation caused by extensive lesions of lungs, it seems wise in this class of case to use transfusion cautiously. The transfusions were done by the indirect method, using the Kimpton tube, Vincent tube, or modified Carrel ampoule (No. 17). This method proved easy to apply and satisfactory in practice.

The importance of skin suture for open pneumothorax has been referred to above.

When the patient has recovered sufficiently, the physician and surgeon acting in collaboration should examine him thoroughly. If a radiological examination is needed, they should confer again when the resulting information is available. One cannot lay too much stress on the importance of screening, when skilfully done. Faulty examination with the screen may lead to the most disappointing results. The size and exact position of the missile should be determined before any attempt is made to remove it.

Post-operative Treatment.

The post-operative treatment of chest cases is important.

If a specimen of chest fluid has not already been obtained for examination in the laboratory, it is taken on the operating table. To avoid possible contamination, syringes and needle used for this purpose are sterilized

in the autoclave. Experience shows this precaution to be worth while. After operation, the patient is placed at first in the semi-recumbent, and later in the semi-sitting position, when his pulse is of good quality. When he is at all collapsed, hot-water bottles are used, sodium bicarbonate and glucose are administered by rectum from a Carrel ampoule, by the "continuous drop method." Intravenous saline, or five per cent sodium bicarbonate solution, is recommended by some surgeons, but we doubt if such infusions are more beneficial. Fluids are allowed *ad lib.* for the first twenty-four hours after operation, and eggs may be given in warm milk. Alcoholic drinks are withheld in the earlier stages after operation. At the end of forty-eight hours the chest should be needled, a specimen taken for examination, and aspiration performed if there are more than a few ounces of fluid in the chest. Smaller quantities can be removed by refilling the syringe several times. Should the chest fluid be found infected, or the fluid show a tendency to increase rapidly, the chest should be aspirated at intervals of from twenty-four to forty-eight hours. In such cases irrigation of the pleural cavity can be performed through the aspirating needle on the syphon principle. Aspiration, sometimes assisted by what may be called "aspiration-irrigation," may be the means of effecting a cure when the infection is not too severe.

When, however, fluid continues to accumulate, and the pulse and temperature remain elevated, one must resort to secondary drainage. If the operation wound is in a convenient place, preferably low in the posterior axillary line, a drainage tube can be readily introduced after removing a few stitches. The cavity can then be irrigated with warm saline or Dakin's solution, using a large amount once daily, or small quantities at frequent intervals. The former method is distinctly harmful in some cases, and apparently should be reserved for those in which the cavity is firmly walled off, and extensive collapse of the lung prevented by adhesions. When much air passes to and fro on removal of the dressing, showing pronounced mobility of the lung, it is well to irrigate through Carrel tubes, to keep them closed during the intervals and to place a large piece of jaconet in the dressing to prevent as far as possible the passage of air through it.

When, in spite of irrigation, a foul discharge continued from the cavity, and pyrexia persisted, in several instances we saw pulse and temperature fall to normal, after ½ ounce of "bipp" mixed with six ounces of liquid paraffin had been introduced into the chest. It seems to have real value in helping to clean up foul cavities. When using it, the effort should be made to bring the mixture in contact with all parts of the cavity, by turning the patient about. The excess is then allowed to run out. Poisoning was not observed, and is not likely to occur when there is a much thickened pleura and free drainage. In a few cases of draining empyema, we used polyvalent antistreptococcal serum in daily doses of thirty cubic centimetres with apparent benefit. For restlessness caused by

distress in the first days after operation, occasional doses of morphine $\frac{1}{6}$ grain, with or without atropine, according to circumstances, or of heroin $\frac{1}{6}$ grain were used. It is important at this stage that the patient should be quiet and at rest.

Anæsthetics.

Three methods of anæsthesia are in vogue :—

(1) Local anæsthesia.

(2) Chloroform and oxygen.

(3) Gas and oxygen.

A pre-operative narcotic is very helpful in all three forms, and when local anæsthesia is to be employed it is necessary.

(1) For "local" we used $\frac{1}{100}$ grain scopolamine, $\frac{1}{3}$ grain omnopon and $\frac{1}{100}$ grain atropine, given hypodermically one hour before operation. If the patient was not then drowsy another $\frac{1}{3}$ grain omnopon was used. Local anæsthesia has disadvantages. It takes from fifteen to twenty minutes to administer efficiently, and again to carry out intra-thoracic manipulation it is necessary to supplement it with gas and oxygen. The solution used contained one per cent novocain in normal saline, and to each ounce of this was added eight minims of adrenalin chloride (P.D.)

(2) Chloroform and oxygen given through a Shipway apparatus has been used extensively by Colonel Gask, and has given uniformly good results.

(3) Gas and oxygen has been used in thoracic surgery in America for several years. In this station we were fortunate enough to have the gas-oxygen apparatus known as the "monovalve," and there was ample opportunity to test its value in chest work. Having given "local" and chloroform and oxygen a fair trial, the conclusion was reached that gas and oxygen was the ideal anæsthetic for chest surgery. Desperate cases in which one would be afraid to employ the first two forms of anæsthesia will stand gas and oxygen surprisingly well. Gas and oxygen is but slightly toxic, cyanosis can be easily avoided, and it is possible to inflate the collapsed lung by oxygen pressure while the pleura is being sutured, and lastly, recovery from the anæsthetic takes place in a few minutes. This rapid recovery is believed to be an important factor in the success of this means of anæsthesia. Table VI gives data as regards pulse and blood-pressure during gas-oxygen anæsthesia.

A careful and experienced anæsthetist is required both for the administration of chloroform and oxygen, or for gas-oxygen in chest cases.

Results of Operations.

The general results, including those not operated on, are shown in Table I as regards casualty clearing station mortality. Of later results at the base, information at hand is incomplete.

TABLE VI.—Gas and Oxygen Administration. Observations on the Pulse and Blood-Pressure.

Case 1.—September 12, 1917, Sergt. W.: Gunshot Wound Chest. Entrance only.

	Pulse	Blood-pressure
Before induction	144	69
Blood transfusion (750)	110	105
End of operation	124	110
One hour later	120	100
Four hours later	130	117

Died fifth day: Pericarditis. Bullet found in superficial femoral artery at autopsy. Perforation of thoracic aorta.

Case 2.—September 12, 1917, Pte. M.: Shrapnel Wound Chest, Left Leg.

	Pulse	Blood-pressure
Before induction	152	102
Pleura opened	146	125
Closure	156	135
Turned on side	84	115
End	104	96

Died two days later: Shock.

Case 3.—September 11, 1917: Shrapnel Wound Chest and Diaphragm. Entrance Wound only.

	Pulse	Blood-pressure
Before induction	140	107
Pleura opened	132	143
Diaphragm sutured	136	105
Lavage	136	105
Closure	140	84
One hour later	144	74

Died nine hours later: Shock. There were two large tears in diaphragm. A large missile was removed lying in vertebral recess. The spleen was much lacerated, and omentum was in pleural sinus.

Case 4.—September 18, 1917, Pte. H.: Shrapnel Wound Chest, Arms and Buttocks; Foreign Body from Pleura.

	Pulse	Blood-pressure
Before induction	104	105
Pleura opened	—	—
Pleura swabbed	140	140
Closure	160	120
Excision other wounds	150	110

Base, September 28, 1917.

Case 5.—September 15, 1917, Pte. S.: Shrapnel Wound Left Chest; large Foreign Body removed from Pleura.

	Pulse	Blood-pressure
Before induction	120	128
Pleura opened	160	170
Closure	144	100
End	130	100

Base, September 21, 1917.

Case 6.—September 7, 1917, Pte. V.: Gunshot Wound Chest, Extensive Entrance Wounds; Streptococcal Infection.

	Pulse	Blood-pressure
Before induction	114	135
Resection	120	130
Pleura opened	130	150
Lavage	130	130
Closure	124	135
One hour later	120	130
Four hours later	112	138

Base, September 24, 1917.

Case 7.—September 12, 1917, Pte. T.: Shrapnel Wound Chest, Extensive External Wounds—both "Sucking"—Left Arm.

	Pulse	Blood-pressure
Before induction	160	60
Blood transfusion (700)	128	88
Lavage	136	92
End of lavage	148	80
Excised wound arm	144	93
One hour later	144	96
Three hours later	160	80
Eight hours later	160	70

Died eleven hours later.

Note.—The above cases were all in a very serious condition when operated on.

TABLE I.– 297 CASES.

Results in General at Casualty Clearing Station.

	Sent to Base	Died at Casualty Clearing Station	Totals
Operated on	111 (79 per cent)*	30 (21 per cent)	141 (46 per cent)
Not operated on	134 (86 ,,)	22 (14 ,,)	156 (53 ,,)
Totals	245 (82 per cent)	52 (18 per cent)	297, total of all cases

* Two of these cases are known to have died from sepsis at the base.

In Table II the results of operation have been classified in three main groups, and in Table III A, B, C, these groups have been subdivided and further analysed. The cases which had parietal operations only, show a strikingly low mortality as compared with thoracotomies. Generally speaking they were the least severely injured cases. The primary drainage group of fifteen cases is too small a number on which to base definite conclusions, but its very high mortality as compared with the thoracotomy group may be significant, and certainly suggests that primary drainage is a pretty serious operation to perform early. This group, on the other hand, included most, if not all, of the heavily infected cases and some cases of open pneumothorax believed to be badly infected. Table III A is of interest especially to show the type of cases in which secondary drainage was required and its results. The group of secondary drainage totals only fifteen cases, the same number as that of primary drainage, and again, there are not enough cases to draw conclusions from. It may be worthy of note, however, in view of the present tendency to close all chests, if only for a short time, that the results for secondary were better than those for primary drainage. Secondary drainage was performed in twenty per cent of all the cases of thoracotomy.

TABLE II.—141 CASES.

Operative Results Grouped.

Type of operation	Number of Cases	Sent to Base	Died at Casualty Clearing Station	Stay at Casualt Clearing Station
(1) Parietal	50 (35 per cent)	48 (96 per cent)	2 (4 per cent)	2 to 4 days
(2) Thoracotomy, chest closed	76 (54 ,,)	57 (75 ,,)*	19 (25 ,,)	6 ,, 8 ,,
(3) Primary drainage..	15 (11 ,,)	6 (40 ,,)	9 (60 ,,)	21 days
Totals ..	141	111 (79 per cent)	30 (21 per cent)	—

* Two of these cases are known to have died from sepsis at the base.

TABLE III A.

ANALYSIS OF GROUP 2. 76 CASES.

Thoracotomy and Closure.

Sub-groups	Number of Cases	Sent to Base	Died at Casualty Clearing Station	Stay at Casualty Clearing Station	Secondary drainage at Casualty Clearing Station		
					Number of Cases	Sent to Base	Died at Casualty Clearing Station
Repair of parietes and removal of foreign body from chest wall	27	23 (85 per cent)	4 (15 per cent)	6 days	3	2	1
Removal of foreign body from lung or pleura	17	14 (82 per cent)*	3 (18 per cent)	6 ,,	7	5	2
Open pneumothorax, removal of foreign body	23	14 (61 per cent)*	9 (39 per cent)	6 ,,	5	1	4
Abdomino-thoracic; repair of diaphragm	9	6 (67 per cent)	3 (33 per cent)	8 ,,	—	—	—
Totals	76	57	19	6 to 8 days	15 (20 per cent)	8 (53 per cent)	7 (47 per cent)

* One of these cases is known to have died of sepsis at the Base.

TABLE III B.

ANALYSIS OF GROUP 3. 15 CASES.

Primary Drainage for Established Infection.

	Number of Cases	Sent to Base	Died at Casualty Clearing Station	Average stay at Casualty Clearing Station
Infected hæmothorax	7	4	3	21 days
Open pneumothorax	8	2	6	21 ,,
Totals	15	6 (40 per cent)	9 (60 per cent)	—

TABLE III C.

ANALYSIS OF OPEN PNEUMOTHORAX. 31 CASES.

	Number of Cases	Sent to Base	Died at Casualty Clearing Station	Average stay at Casualty Clearing Station
Closed and kept closed ..	18	13	5	6 days
Closed. Secondary drainage ..	5	1	4	6 ,,
Primary drainage	8	2	6	21 ,,
Totals	31	16 (51 per cent)	15 (48 per cent)	—

Table III c was prepared to show the results in all cases of open pneumothorax. It shows strikingly good results in the closed cases that did not subsequently develop infection, which, so far as a small series can, emphasizes the importance of early operation in these cases.

Stay at Casualty Clearing Station.

The average duration of stay at the casualty clearing station shown in Tables II and III indicates that most of the cases remained there long enough after operation to develop signs of intra-thoracic infection if they were going to do so.

It is our opinion, however, that many cases should have been kept longer at the casualty clearing station before being sent on a long journey. This would have been done had not pressure for beds necessitated early evacuation.

TABLE VII.

INFECTIONS CLASSIFIED. 30 CASES.

Nature	Recovered	Died
(1) Staphylococci	4	1
(2) Streptococci	5	8
(3) Gas bacillus	4	2
(4) Staphylococci and streptococci	—	3
(5) Streptococci and gas bacillus..	—	3

TABLE IV A.

OPERATED CASES TRACED TO THE BASE. 35 CASES.

Condition on Arrival at Casualty Clearing Station :—

Good	4	35
Fair	21	
Bad	10	

Missile :—

Shell fragment	29	35
Bullet	3	
Shrapnel ball	2	
Not known	1	

Nature of External Wound :—

Entrance only, closed	20	35
,, ,, open	2	
,, and exit, closed ..	10	
,, ,, one open ..	3	

Intra-thoracic Condition :—

Hæmothorax "uninfected" ..	26	35
,, "infected" ..	4	
Pneumothorax open	5	

Results :—

(1) Died at base from sepsis ..	2	35
(2) Secondary operation at Base	3	
(3) Uneventful convalescence ..	30	

Sent to England 33

Secondary Operations :—

Previously classed as "uninfected" hæmothorax..	2	3
,, ,, "infected" ,, ...	1	

Deaths at Base :—2.

One occurred in a case of secondary drainage for infected hæmothorax; the other in a case of open pneumothorax which had been closed.

TABLE IV B.

Type of operation	Number of Cases	Died at Base	Sent to England	Secondary operation at Base
(1) Parietal	8	1	7	—
(2) Thoracotomy; chest closed..	19	—	19	2
(3) Primary drainage	4	—	4	—
(4) Secondary drainage	4	1	3	1
Totals	35	2	33	3

Results at Base.

Of special interest is a series of thirty-five operated cases, concerning which replies were received from the Base. Tables IV A and IV B give the main facts in regard to them. It will be noted that in eight cases, parietal treatment only was carried out, and that twenty-seven were thoracotomies. Reply postcards were sent down with nearly all cases, and as no further selection was practised, these twenty-seven thoracotomies should give a fair idea of the later history of the group which comprised ninety-one cases in all (see Table II, Groups 1 and 3).

Table IV A emphasizes the preponderance of wounds due to shell fragments as compared with bullets or shrapnel balls. Fragments of bombs and grenades were classified as shell fragments owing to their similarity. It also gives a rough indication of the condition of the patients on arrival at the casualty clearing station.

Results, Cases not operated on.

The mortality in cases not operated on at the casualty clearing station was fourteen per cent. Many of these patients were in such bad condition on arrival, that operative treatment seemed out of the question, either then or later. It is possible that transfusion followed by operation might have saved a few of them. Of the cases not operated on, few were traced to the base, and nothing can be said of their later history. There is at hand, however, unpublished data in two considerable series of cases, observed at the base between June and September, 1916, and between March and August, 1917.

The proportion of infections observed in the series was small. The weather was fine and warm, and the number of bullet wounds as compared with shell wounds was large. The low incidence of intra-thoracic infection may perhaps have been due to these causes.

In the second series serious infections were common, and deaths numerous, in spite of attempts at drainage. As regards weather and type of missile predominating in the spring of 1917, conditions were the opposite of those in 1916. The observations therefore tend to reinforce the general view that shell wounds lead more often to infection than do bullet wounds,

and that cold wet weather is unfavourable for chest cases. It is unfavourable to operated chest cases as well as to those not operated on, because of the frequency of severe bronchitis and pneumonia, so that operating at the casualty clearing station has rather to be curtailed than increased when the weather is cold and wet. Both series of cases observed at the base showed clearly that a good many do well without any operation at all. We should like to see more data published in regard to cases of this kind, lest enthusiasm for chest surgery be carried too far. Hæmothorax of itself, even when large, certainly is not an indication for thoracotomy.

Conclusions.

(1) Indications for operation can be clearly defined as in the text, but will be modified as future experience suggests.

(2) Open pneumothorax should be closed temporarily by skin suture at the earliest possible moment.

(3) The size and location of the missile as well as its nature should be accurately determined before operation.

(4) When thoracotomy is to be performed and the chest closed, the operation should be undertaken with the least possible delay, but with due regard to the general condition of the patient. The object is to remove the source before the infection becomes established.

(5) It seems probable that when known intra-thoracic infection has not become localized, the chest should be closed and drained later when necessary, and that primary drainage should be reserved, as a rule, for cavities of moderate size.

(6) The hæmolytic streptococcus is one of the most dangerous organisms. The gas bacillus, unless combined with other organisms, is less dangerous.

(7) Cases of thoracotomy, if possible, should remain at the casualty clearing station for two weeks or more, after operation.

(8) Gas and oxygen is the best general anæsthetic for chest cases.

(9) Careful management, both before and after operation, is important.

(10) The use of morphine, when indicated, is of great value both in the pre-operative and the post-operative periods.

(11) Close co-operation between surgeon, physician and radiologist adds materially to the success of the work.

SOME MUSINGS OF AN IDLE MAN.

By Colonel R. H. FIRTH.

I.

As so often happens at mess, we were discussing our seniors and betters one evening when, in respect of a certain person, someone said "Oh, he was nothing but a charlatan." As I could not sleep that night, I found myself thinking of the man who had been dubbed a charlatan, and as I knew him felt impelled to amuse myself with some reflections on the incident. Of course, we all pretend to despise what we call charlatans, yet in real life we must admit that a good charlatan more often than not gives us real pleasure, especially if we are able to see through him. The truth is, it is the business of such a person never to disappoint and it is rarely that he does disappoint. If we think of the converse man, the real genius, we appreciate that success to him is a mere by-product and that his sole aim is to do his work. All his genius is devoted to being a genius, and he has no energies to spare for behaving like one. With the charlatan, however, it is his business to behave as a genius and he often does it far better than the genius himself.

Whether we think of charlatan soldiers, poets, writers or musicians it is obvious that in each case the successful man must deceive himself. A musical genius may test his work to some extent on his landlady, relations or friends, and from them learn whether it is good or bad and what effect it may have on the outside world, but the charlatan must be his own critic, since he is audience as well as composer or author. It would seem that unless he have himself for gallery, he would never play at all; for to him the work itself is nothing but the effect everything. In putting it in that form, we mean that he tries to produce effects without causes, or the effect of genius without the genius itself. The odd thing about it all seems to be that such a man must produce these causeless effects upon himself before he can produce them upon others. In this way we can picture the complete and successful charlatan, as producing always causeless effects upon himself, losing all sense of cause and effect, and coming to live in a world of illusion, a world where the results are whatever he wishes them to be. It seems delightful, but the penalty is that he himself is subject ever to his own unreality, which unreality is the cause of his success and success increases it. But suppose some disaster befall, what then? The probability is that it will show him what he really is and so bring him salvation; but if not, then he gains the whole world at the price of his own soul.

The true life of the type of person of whom one is thinking begins when he comes before the world, because his art consists, not in producing sham works of genius, but in behaving as if they were real. To a large extent,

we onlookers are to blame, for we look for effects and the charlatan produces them; he conforms to our ideas of what he ought to be and we reward him with our applause. In this applause he takes so much delight that not a few of us get some pleasure in watching him. But it may be said that the man who gets the palm without the dust will not enjoy it. True, but the charlatan is in a class by himself, in that he spends life in enjoying the palm just because he has not earned it. If there is no more reality in life and no more significance than he finds in it, then all is well with the charlatan, and the conclusion is that it is as good to be a charlatan as to be a man of genius. If otherwise, then we must be so complete charlatans that we lose our own identity altogether in the various parts we play, with the result that at the end there is nothing left of us to condemn. In closing this topic, one recalls to mind the following refrain:

> Si vous lisez dans l'épitaphe
> Du magistrat Fabrice: "il fut homme de bien,"
> C'est une faute d'orthographe,
> Passant, lisez: "homme de rien."

II.

A little while ago, I went to see a senior officer in order to pay him a courtesy call and also to ask his advice. To my astonishment, I was greeted with scant courtesy, no sympathy, and came away without the advice I went to get. The incident annoyed me at the time, as the discourtesy shown was as unjustifiable as it was unexpected. Still, as I drove home, I could not help smiling to myself as I thought how it was one of those little happenings which bring home to us the truth of the old lines:

> "A manne by nothinge is so well bewrayed
> As by his manneres, in which plaine is shewne
> Of what degree and what race he is growne."

It was all a mere matter of manners and if "manneres makyth manne" it must not be forgotten that it is man who first makes manners. Before judgment can be formed as to whether an individual has manners or not, a standard of some kind must exist. And this standard, however it may vary in different countries, indicates some sort of ideal. The manners of people are not their laws, their customs nor their fashions, but rather an expression of their way of life and their deportment. Although the underlying principles of manners remain the same, history teaches us that the standard is ever changing, and what is fit and proper in one generation would be in bad taste the next. He, therefore, who would enjoy the advantages to be desired from intercourse with the best, must make a point of conducting himself in accordance with the prevailing mode.

It may be objected that the well-mannered person is too formal or

bound by set rules, but, just as order is the first law of Nature, so should self-discipline be the first rule of conduct. Without a code of some kind, society would be chaos. There is of course a golden mean in manners as in everything else, and dignity has its limits as well as ease. Further, what are usually referred to as good manners can hardly be said to be in any way natural to man. They rather may be considered as a check on natural impulse and disposition. They are a result of civilization and culture and to a certain extent, therefore, a sort of veneer. Although manners may to a large degree be a sham, still if they are of the best kind they are very agreeable. Each one of us knows the charm and calm about a well-bred and well-mannered man or woman that never fails to please, just as the reverse always ruffles and discomposes. For those holding a position of responsibility or authority the recognition of this fact is peculiarly imperative. I once was on intimate terms with a certain judge remarkable for his urbanity and good manners. Occasionally, I used to attend his court and note his way of performing unpleasant duties and pronouncing unfavourable decisions or sentences. His faculty of wrapping up and conveying unpalatable facts in kindly language and by courtly mien almost made one think it would be a pleasure to be tried and sentenced by him.

Just as the life of a nation is reflected in its literature, so is its individualism mirrored in its manners. The present day may be regarded as a period of transition in manners in all parts of the world. Nations have left or are leaving the old moorings, and forces are at work which are powerful factors in moulding modes of conduct. What the final outcome will be, few of us can form any idea; we can but hope that the old standards will not be jettisoned completely. It is easy to criticize and ever too difficult to conform oneself to an approved standard, be it of manners or morals; still, in our endeavour to avoid either extreme it may not be too pedantic to quote as a general guide to good manners the following words, the author of which I do not remember:

> "To thee be all men heroes; every race
> Noble; all women virgins; and every place
> A temple."

III.

Picking up the daily paper, one day, I was confronted with several columns of names of people awarded some new Order, while on another page was a paragraph stating that it had been decided to issue certain badges to persons who had served for so many months or done something or other. As I put the paper down, it flashed upon me that verily to-day is the day of badges. As I sat idling in the chair, certain thoughts came tumbling along to the effect that either, if we are not badged, some of us have other distinctions, or that those who are not badged must surely be among the undistinguished. These latter are they who have not the

delicate faculty required for attaining these distinctions, or they do not present their claims at the psychological moment, or perhaps worst of all they are unknown to the powers that be. This latter obviously is an important point.

Here indeed arose much food for thought. One may have done the State some service or one may have not. It does not matter much either way, for the chief thing is to know your influential man or, at least, be in a position to impress him with your merits. But this method of achieving distinction or exemption, as the case may be, does not commend itself to every one. In the matter of badges or other distinctions for war service, why not badge the man who has to pay a huge income tax? It is his mite towards the great expenditure and he is not the less patriotic because he has been compelled to give. The majority of us are patriots on compulsion; therefore, why not acknowledge this sacrifice officially? A sacrifice is a sacrifice, no matter by what means it is obtained. Either we are victimized or we offer up our goods as a voluntary sacrifice, and surely the victims are as worthy if not more worthy of recognition than the sacrificial devotees. So, why not an income tax badge?

Again, there are the men, women and children who have scraped in their "all" in order to buy a War Saving Certificate, a Bond, or to take up some War Loan. Does he, she or it not deserve a badge? It may be, their particular effort is not worthy of an Order, but a badge would do no harm and might develop much self-satisfaction with a corresponding incentive to go and do it again. Really, the thought grows and raises the vision of ardent patriots economizing so well and so persistently handing in their savings to the National Exchequer that their accumulated badges would outrival our best polychromatically be-ribboned warriors. We can go farther and logically conceive the people who have wholly or partly lost their incomes by the war as so many more sacrificial victims on the altar of patriotism and as such deem them worthy of recognition. For these poor souls, one pictures a gay and gaudy badge as a kind of set-off to the drabness of their lives since the war began.

Finally, we reach the question whether or not everybody who does anything should be badged. If that were so, then no man, woman or child would be able to raise the finger of scorn to his, her or its neighbour and say "You've been a slacker and a failure." At present we are badgers on rather a one-sided scale, but why should we not gain equilibrium and be a true nation of badgers? These thoughts have carried me far, but they clearly point a way to the removal of competition in patriotism and the rendering it possible for everyone to escape the opposite imputation. What more could be desired? for we cannot have it both ways. Either one must be distinguished or undistinguished, badged or unbadged. As a shy, undistinguished and unbadged man I feel disposed to vote for universal badging, and so be lost in the crowd.

IV.

I suppose our digestions were out of order; anyhow a small coterie of us had been exchanging views as to others, how they had got on and the opportunities and privileges they had had. It was all very amusing at the time, and not unflavoured with the taste of sour grapes, but later came the inevitable aftermath of quiet thought. It took the line of how difficult it is to appreciate the privileged at their true value. Even when they are obviously better than ourselves it is open to us to feel that, given their chances, we should have been better than they. There are many enlightened persons who depreciate the rich or well-born. They think that exceptional wealth must have a bad moral effect, and are pleased if a rich man shows himself a vulgarian, or a scion of some old family turns out a wastrel. To such people, the one is the effect of money and the other of breed and environment. If a rich man be generous, the temptation is to say that it is easy to give from superfluity. Similarly, if Crœsus has trouble, we remark that wealth has nothing to do with happiness. Yet, how many of us would fail to rejoice if chance gave us his fortune?

Much the same attitude crops up among the uneducated in respect of the educated, and it is not so very surprising, because the difference between an educated and an uneducated man is wider than that between the man with a hundred a year and the man with ten thousand. To analyse the position, we need to ask ourselves, What do we mean by "educated"? The best answer is that it means those who between 14 and 20 years of age have been able to give their time to books and athletics instead of to wage-earning. There we have it in a nutshell and the privilege is a democratic one. It makes no difference whether the boy has worked himself up the ladder from primary school to university or been helped up by money and environment to the desired mental position. In both cases, the individual is never again among the ignorant and not infrequently the desertion is resented by old associates. So much is this the case that it may be said that, except colour-bar, the sharpest of social differences is the difference of education. Whether education will be more respected when it becomes more general is difficult to predict. The ignorant have still the idea that it is the substitute for innate ability, but possibly as they get more of it they will realize that it is not. Of one thing we may be very sure, it is that however much we may increase the reasoning power, mother-wit can never be taught. That is a privilege which it is idle to envy and useless to depreciate.

This brings us back to that will-o'-the-wisp which our party of discontented ones tried to catch. That is, What is the secret of success in life? It would seem as if there are two kinds of success: the rare kind which comes to the man who can do what no one else can do, in other words, genius; and the commoner kind which comes to the man who has developed

ordinary qualities farther than most men. We can leave the geniuses alone, but in men who succeed greatly, whether we call them ordinary men or not, there is generally an urgency of desire not to be found in the great mass of mankind. They are the men who seem to know what they want to do, and from the first employ all their powers in doing it. By a a kind of instinct they plan their lives so that no effort of theirs is wasted, with the result that all their experiences and actions have a cumulative power. Here we find ourselves not far from the idea that genius consists in taking pains; but, if we say that the right kind of pains must be taken always, we leave to genius a good deal of its mystery. It is all very well for us to have talked about privileges and special opportunities, but after all the men we discussed, and at heart envied, had a power of developing ordinary qualities into an extraordinary efficiency for a particular purpose. In vain one thinks and seeks a name for it. It is not will or energy, because there clearly is in it a power of direction which these words do not imply. Character is too vague a word and used in too many different senses to explain anything; while, as for common sense, the very fact that it is common prevents it from being the cause of uncommon success. I leave it to the successful reader to settle this for himself and give the world a panacea wherewith to combat unsuccess.

V.

The preceding musing touches the fringe of another question, and that is, What attributes make men "great"? It is not easy to say, but of this we may be sure that there has never existed anyone who has been great in every respect. The essentials of greatness are a genius for a particular rôle and a mastery of the details of the position. Daring originality, a strength of mind to stand alone, and a disregard of current opinion are the necessities of those who would scale the heights. There have been scores of men who have been geniuses and yet blown their brains out. Weakness such as that is never the concomitant of real greatness. Of course, greatness is largely a matter of comparison, for it varies both in degree and kind. At some periods the necessary qualities are widely diffused, whilst at other times the general average ability is low. Further, much depends on locality. The first man in a village would be a mediocrity in a town and a nobody in a city. The really great ones of the earth are great everywhere, for the world is their theatre. Yet, after all, we need to remember that greatness is not an actuality, for it has no tangibility or reality; it is simply a relative term. He that is great to-day may be nobody to-morrow, because a greater than he may appear. This was the case with Philip of Macedon, who would have held a far higher place to-day had he not been eclipsed by his son Alexander. The greatness of Philip was local, whilst that of Alexander was universal.

Again, greatness varies in kind because every walk in life has its great

men. Just as there have been great kings, great rulers, great soldiers, great doctors, great statesmen, great lawyers, great poets, great musicians, great painters and sculptors, so there have been great cooks and great dress-makers. These two latter do not purchase their greatness by the destruction of their kind, like a Caesar or a Napoleon. Those men earned the epithet "great" at the cost of some two million of lives and the Kaiser may earn it some day by an even greater holocaust of men; but it is a big price to pay for a name.

It would be interesting, if only possible, to collect all the truly great men of the world and see how much room-space they would occupy. Probably, the whole of them could be placed in a room of ordinary dimensions, since men whose reputation will live through the ages appear but once in a century. Years have no power to dim the greatness of a Homer, a Shakespeare or a Milton; so with a Phidias, a Raphael or a Correggio. Though dead two thousand years ago, are not Plato, Socrates and Aristotle still teaching us? And do not the souls of a Handel, a Bach or a Beethoven still linger among us and stir our emotions and feelings? Or to turn to literature and history—a Bacon, a Gibbon, a Herodotus and a Thucydides live for us in our day, while a Demosthenes, a Cicero and a Plutarch each in their own spheres of oratory, exposition and biography dwell among us as great men.

Some one has said that some men are born great, some have greatness thrust upon them, while others achieve it for themselves. Whether this be true or not, we have to admit that some individuals must be first. Caesar said that he would rather be first man in a village than second in Rome, and Napoleon laid himself out to be not only the first man in France but the first man in Europe as well. To men of their type, greatness is a boundless circle, and their lives like meteors which consume themselves to enlighten the earth. They and others like them are they of whom it might be said, greatness is nothing unless it be lasting. For the greatness of the man who passes out of human ken is gone for ever.

The thought suggests itself here, Is the excessive development of a particular quality always at the expense of all others? In most cases we are tempted to see an atrophy on the one side which is proportionate to the exuberance on the other. The great general is rarely a great scholar, and the great poet is not usually a great statesman. It was said of Goldsmith that he wrote like an angel and talked like a slut. Some great men of course excel in more than one direction, but the failure of the greater number in other branches than their own is largely owing to shortness of time, and that he who would be truly "great" must look neither to the right nor to the left, but ever keep his goal in view. In so thinking, it is not suggested that every one can attain to greatness by untiring efforts, any more than every insect can become a butterfly or every bird an eagle. Obviously, there must be germs of greatness in every great man, for greatness must be latent before it can be developed, and even then

must have the opportunity to grow and have scope for its display. But the diamond is no less a diamond because still in the earth, nor the sun less an actuality because it cannot be seen or felt I recall Gray's lines in his "Elegy":—

> "Perhaps in this neglected spot is laid
> Some heart once pregnant with celestial fire;
> Hands, that the rod of Empire might have swayed,
> Or waked to ecstasy the living lyre."

But to such as these, may not the lack of opportunity to be great have been more than balanced by the chances of attaining happiness? I think so, for I doubt if a great man is ever happy as the word is understood ordinarily. I may be wrong, but to be happy indicates a certain degree of content, and such a condition is hardly possible to a really great mind, full of ambitions and ever confronted with fresh difficulties to be surmounted.

Then again, what about the selfishness, the faults and excesses which have marked the progress of so many of those whom the world has called "great"? True, it is not customary to judge an opera by a particular passage, a poem by a single verse or a picture by a particular part; but faults and excesses are aspects of so-called "greatness" which loom frequently in respect of many who have been called "great." Of these defects we would say they are but blots by which these great men show their humanity. These defects have had no part in the making of their greatness, but rather have prevented them from reaching that degree of excellence to which they would otherwise attain. Then, too, let us remember that the lives of the great, though crowded with incidents, have generally been short or ended tragically and sadly. Here, then, is consolation for us who are apt to complain because we cannot reach the topmost rung in the ladder of fame. Let us take heart, and if we cannot be among the great ones of the earth, we can, at all events, be great in those little things which go to make what is called life. The stars are not all of the first magnitude, yet each is doubtless doing that duty for which it is by Nature most fitted; similarly, do the individuals who go to make mankind differ from each other in the light which they shed and the greatness which they attain. For those of us who have failed to reach a conspicuous position, there is ever the consolation "the world knows nothing of its greatest men."

VI.

Among the periodicals which I take in and read regularly is one known as "Science Progress." The perusal of a recent number impels the thought, what will be the position of our remote descendants at the end of another two hundred years if knowledge continues to increase at the same rate as it has increased during the last seventy years? I tried to put myself back in the position of a man living in 1846, and realized how much the growth of knowledge had revolutionized our view of the world since

that date. As to the future, it is obvious that since our increase of knowledge is itself the result of a mental attitude which desires knowledge above all things, any future increase of knowledge will be only so long as that mental state continues in man. Some may question this, because they cannot conceive a civilization without a desire for knowledge, or because they assume that desire to be normal in civilized societies. Yet, history teaches us that among all the great societies of the past, only the Greeks and they only at their zenith, were consumed by a passion for knowledge, and even among them it was not without rivals.

Doubtless our present civilization represents the highest organization for the acquirement of knowledge which the world has ever seen, but our triumphs and enthusiasm in this particular cause will continue only so long as they satisfy the best minds. The desire for knowledge of material facts and things will persist only so long as it satisfies man's spirit, and we cannot assume that the appetite for scientific knowledge will grow always with what it feeds on. At times one is conscious of signs of a revolt and this revolt arises from the fact that our curiosity about the past has made us less complacent about the present. The more we learn about the mind and life of the past civilizations, the more we realize that they in some things were as good as we are and that our own energies are limited like theirs were. He will be a rash man who affirms that we excel the ancients either in the knowledge of ourselves or in the exercise of the purely not intellectual faculties. There are people who think that the more we know of the material world, the more we must know about everything; but that belief is not confirmed by experience. We have many theories about the relation of man to the universe, but none have been of use to us in the art of living. The present pursuit of material knowledge satisfies the surface curiosity of our minds, but our deeper and finer desires remain unsatisfied.

The more we look into it, the more we see that our modernism is characterized by a specialism in the pursuit of knowledge. Someone has compared our modern society to a hive of bees, each individual being absorbed in his task and losing all his individuality in the performance of it. This is a false simile, because men look before and after, and yearn for what is not. The more our desires are satisfied in one direction, the stronger they become in another, and our present-day stability of knowledge makes us all the more aware of our instability of faith and of ideas based on faith. Take morals for example, they are a working system but not based on any conception of the universe. In the same way, we fear our emotions, regard them as mere survivals and make no attempt to train them. The whole tendency is to starve all our faculties except those that are purely intellectual; yet, we have those faculties still with us and at times they assert themselves, and sooner or later they will divert our higher energies from a mere pursuit of knowledge to other ends, with the result that we shall be more concerned with being than with knowing.

Whether it will be a gain or a loss, I leave to the reader. For myself, I retain an open mind, but this much I do think; it is that, if it give a life more clear of purpose then it will be a gain. Our present-day difficulties are that we suffer from a deep and unwilling scepticism about the proper aims of life, and no advances in material knowledge satisfy the questions raised by this scepticism.

VII.

Riding along the bank of a certain canal in France one day, I came upon a group of men engaged in stoning a cat and some kittens which they were trying to drown. The incident aroused in me a forcibly expressed anger at the time and some serious thought later on. An interesting ethical argument presents itself as to why one is especially bound not to behave cruelly to animals. The doctrine of the rights of animals has been put forward by some humanitarians, but few philosophers are found to admit this doctrine. Pythagoras believed in the rights of animals because he believed in the transmigration of souls, and to him and to some orientals the killing of an animal was and is the same thing as killing a human being. On the other hand, Christian writers have been as careful to deny the rights of animals as the theory of transmigration itself. The teaching of the early Fathers of the Church was that the chief objection to cruelty to animals was lest anyone by exercising cruelty towards brutes may become cruel also towards men. Later writers are equally emphatic to explain that an animal as such has no rights. It is obvious that if we contend that animals have rights, we shall land ourselves into strange difficulties. We can ask ourselves, Have they a right to live? If they have, we must become vegetarians, and protest even against campaigns against the fly nuisance or for the extermination of mosquitoes. I once had charge of a lunatic who had become so sensitive to the horror of killing living creatures that he used to pick his steps carefully as he walked about for fear of treading on an insect. In daily life, we treat animals as though they do possess rights, for we feel that even the fly has the right not to have its wings pulled off for fun. But we cannot establish those rights philosophically. Many a time have I, and doubtless also has the reader, interfered with men ill-treating a dog or a horse, much in the same way as I revolted against the incident which was the starting-point of these musings. But, what was the cause of this revulsion? Doubtless the survival of some transcendental feeling which is stronger in us than all the reasonings of the philosophers. It is not a theory of the rights of animals, it is the growth of an almost religious sympathy in us which forbids us to be cruel to animals. It is our feeling for the pain endured by animals rather than any lofty concern for the honour of mankind that makes us hate to see bird, beast or insect tormented.

Our daily press gives us frequent evidence of our public attitude towards those who are cruel to animals, and it is encouraging to those

who believe in the progress of humanity. In these respects our progress has been appreciable, since we are more inclined than our forefathers to insist upon kindness to children and animals. But, even so, there are enough cruel people in the world and sufficient cruel practices still surviving in British sport to warrant the view that even now we human beings are nothing much to boast about and that there is still enough of the beast in us to keep us modest. The cat, for some reason or other, has always been the especial butt of human cruelty. Why this should be is difficult to say. Perhaps, humans have been specially cruel to cats from a feeling that it is only paying the cat out for its own cruelty to mice and birds. There is nothing more puzzling in Nature than the way in which a cat will play with its capture, and one is tempted to ask, what part does all this cruelty play in the economy of Nature? To watch a cat playing with a mouse often strains one's faith in the beneficence of the universe. The funny thing about it all is that, if one likes a cat, one forgives it easily even for its cruelty. We accept the scheme of Nature.

Possibly, our attitude to many kinds of so-called sportsmen has the same philosophic basis. Sport, such as coursing hares, has become to some people a second nature and we blame them for their conduct to the hare no more than we blame the cat for its conduct toward the mouse or bird. We recognize that it is the wild animal in us that delights in the pursuit of the fox or hare. Hunting and fighting are two of the greatest animal excitements known to man and doubtless the expression of the instinct inherited from our forebears who were driven to them by need. On the other hand, we do hate a cruel man quite as much as we sympathize with an ill-treated beast. We feel that the cruel man is a sinner, in that sins are only sins in so far as they can be translated into terms of what we call meanness and cruelty, which are themselves the ultimate shapes of selfishness. But the odd thing about it is that all mean or cruel people do not know they are mean or cruel, and the average man has a curious way of being indifferent to the ill-treatment of his own particular enemy. Truly, it is a funny world, but the redeeming feature is that the average man will not stand anyone being cruel to his dog or horse. In that, we hope there lies a justifiable cloak for many other sins. Perhaps for some of us it may be an asset when life's balance-sheet is struck.

VIII.

The occasion was a wintry day, and myself, feeling none too well, crouched over a stove in my draughty office hut at a certain Corps headquarters. As usual at such times, one's thoughts covered a wide field. The remembrance of them gives a strange jumble of retrospections, anticipations and castle-building. It is the fashion to deride the building of castles in the air. True, if carried too far the practice may amount almost to a vice, but if we divorce our dreamings too severely from our practical ambitions we rob ourselves of certain pleasurable moments and

valuable encouragements or incentives to action. The man who has never built an air-castle must be a dull fellow and curiously devoid of imagination or that hopeful confidence which tempts us on to fresh efforts. So long as we are trammelled by doubts and wonderings whether anything so beautiful could ever befall us, we must of necessity curb our fancies, turn sadly back from some flight into the realms of fantasy and be content to pass our hours in dull pragmatism. I confess to having enjoyed many a half-hour in castle-building, but, from a workaday point of view, it is necessary to keep the practical and the castle-building parts of us in separate compartments, and that is what, I fancy, the greater number of us do.

Closely akin to castle-building are anticipations. The pleasure of these is by some thought to be the greatest we can enjoy, but if this be so then life is as deceitful as a mirage and to the pleasure of the moment must be added the pleasure of expecting it. As a matter of fact, although our anticipations look to the future they are fed from the past, and if we have nothing in our experiences to go by we can expect nothing. If we expect more than we get of pleasure it is because memory also heightens a particular pleasure. In memory, a something takes the place of a past reality, and it is this vision of the past that we expect to be our actual experience in the future. In all our anticipations there is associated memory, and though anticipation and memory deal respectively with the future and the past they are themselves of the present. Of course there is an illusion somewhere, but probably of the moment itself. Shakespeare touches on this problem when he makes Hamlet say that there is nothing either good or bad but thinking makes it so. None of us are prepared to endorse this view except when thinking seems to make everything bad. If things seem good to us we unconsciously lose the *ego* in our sense of the goodness of things, and later on we forget the part that *ego* played and remember simply the pleasurable incident or thing. Much the same process goes on in respect of anticipation, as then we expect some pleasurable thing but do not expect the recurrence of our egotism. In other words, we train ourselves, by a suppression of the present, to see things as we see them when we remember or expect them. This analysis suggests then that by memory and anticipation we suppress or silence our mind at the moment and conceive a reality, much as still waters take a reflection. The reflections may have been broken or blurred, but we remember them as perfect and expect them to be perfect again. The deduction is, therefore, that only the past and future tell us what the present might be. Therein, for many of us, is the clue to not a few sad thoughts.

This brings us to that impossible condition of looking before and after and pining for what is not. Many of us have been tempted to say "If only one trivial thing had been different, all would have been so otherwise." The assertion or speculation is fallacious. The fallacy lies in the circumstance that the speculation raises the whole question of the freedom of the

will. If the will be not free, then for myself or anyone else having to live the past over again it would be a case of having to make knowingly all the old mistakes without the power to correct them. It is hard to conceive a worse condition. On the other hand, if the will is free then the old path of life can be trodden differently only at the sacrifice of personal identity. If in living his life over again, a man is to lose all the memory and consciousness of his former life, then for all practical purposes he is another and not the same man. Moreover, there is no certainty that as another man he would avoid any of the mistakes that he as the original man committed. On the other hand, if he retain his personal identity and say, "Here is where I made a mistake, so am going to act differently," then it follows that his personality must be changed in the process and his personal identity disappears. By this, one does not imply that a man's personality is exclusively the product of his experiences, but rather that it is not independent of them. In the personality of each of us there is an initial and individual element which is overlaid and developed gradually by the experiences and decisions of life, until in the end the only link between the original and acquired personality appears to be the persistent consciousness of personal identity. If that be lost, there is not the same but another man, and the experiences of the one cannot guide or correct the actions of the other. The truth is, we cannot separate experiences from personality and the speculation as to what might have been is just about as profitable as trying to square a circle. There is, therefore, nothing left for us but to make the best we can of the doubtfully consolatory conviction that "things are what they are, and their consequences will be what they will be." *Hinc illæ lachrymæ.*

IX.

From time to time, one has helped in censoring letters. True, the task is not a congenial one, since, for the most part, the letters areuninteresting and commonplace to a degree; still, occasionally one comes across a letter containing expressions, thoughts and perhaps a verse or two which are as suggestive as they are pathetic. These are letters written by men who have experienced those subtle changes in mentality which are some of the possible benefits produced by this war. One refers here to letters by men who, to paraphrase Kipling's words, "started as an average kid," but find themselves finishing as "a thinking man." The problem suggested is both strange and wonderful, also not without significance, for it is in the hands of these men, should they return, that the destiny of Britain will lie. No one could read some letters which I have seen without realizing that thoughts are coming to life in men's brains which were possibly there deep down long before this crisis stirred their half-unconscious but wholly inarticulate minds

I write as one who knows the British soldier well, having watched him in war, in work and in play, and reading some letters recently compels the thought that in these hasty scrawls stands revealed not only the soul of

the British soldier, but surely the very soul of Britain herself. I recall one letter, in particular, as being almost a sacred letter, for therein the unveiling was recorded in lines to be sent home only if the bar were crossed and it conveyed in death what the writer could never say in life. Another feature, which has often impressed me in reading some soldiers' letters, is the strong tie to home and country lying below the curious wordlessness of the average soldier. Before the war, many people talked as if the love of their homeland was dying out and that our island home had ceased to hold the hearts of her sons. No one can think that now. Both in words and by deeds one has seen with amazement what Britain meant to so many. The discovery of what the Motherland meant to thousands of Britons is only too eloquently marked by the graves in Gallipoli, France and Flanders, to say nothing of those under the waters of the North Sea, or in the desert sands of Mesopotamia, the Indian frontier and Africa. Each and all these obscure resting places send back the same message, "Tell England we lie here content."

Admittedly this musing is not free from sadness, but still it is compensated and refreshed by thoughts which come not only from reading the letters of obscure men but also from reading verses of unknown soldier poets. Take such lines as these, written by a Lance-Corporal :—

"Within my heart I safely keep,
England, what things are yours,
Your clouds, and cloud-like flocks of sheep,
That drift o'er windy moors."

To that man, the sight of No Man's Land and the desolation of a fair bit of country had opened his eyes as never before to the peace and natural beauty of his own country. Then again, the lines which my dead friend E. W. Tennant gave me in Laventie tell the same tale. In that shell-shattered town he wrote :—

"I saw green banks of daffodil,
Slim poplars in the breeze,
Great tan-brown hares in gusty March
A-coursing on the leas ;
And meadows with their glittering streams and silver scurrying dace,
Home—what a perfect place."

And it is home in the same way which fills the minds of many soldiers in their letters. These are the men who, compelled to live in some filthy, rat-infested trench when every shell must kill or spare, find their thoughts harking back to some dearly loved corner of Britain and can express both their fortitude and their longing in such words as Philip Johnson wrote :

"I can't forget the lane that goes from Steyning to the Ring,
In summer time, and on the Downs how larks and linnets sing,
* * * * * *
My God, I never knew till now that those days were so fair,
And we assault in half an hour and—it's a silly thing,
I can't forget the lane that goes from Steyning to the Ring."

Perhaps, after all, the love of home and country is no greater mystery than the tragedy of war ; and that the beauty of the one and the horror of

the other seems to bring home to some men that, unless they be willing to give their life, they shall never know the exaltation of living. Face to face with death, to many has been given a revelation of the joy and beauty of life. Before the War, to many life was hardly worth living and death hardly worth dying. Yet, when the great call came, to all who answered it, both life and death were transformed. I am reminded here of my one-time messmate, Julian Grenfell, for no man better voiced this thought of the changed outlook on life which the War aroused than he, in his lines :—

"The fighting man shall from the sun
Take warmth, and life from the glowing earth ;
Speed with the light-foot winds to run,
And with the trees to newer birth ;
And find, when fighting shall be done,
Great rest, and fullness after dearth."

It is curious to note how rarely one finds in the men's letters any introspective reference to the why and wherefore of the great tragedy, in which they themselves are playing large parts. The only instance of the kind that I have come across is presented by the following lines in the letter of a man in a signal company, attached to corps headquarters.

"'Tis not that I regret the life I lay
Upon the altar with a soldier's pride ;
But why the need? Is it that kings may play,
That I and all my ghastly comrades died ?"

This musing has already gone farther than I intended, but I cannot close it without asking, Is there not some law of compensation which will make up for all this loss of young heroic life? It is hard to say, but surely the writing is on the wall and it reads: "All is worth while if it do but save Britain and make a better Britain." And who can tell us better what the Britain is that her sons are dying to save than Sergeant Coulson who wrote :—

"Mayhap I shall not walk again
Down Dorset way, down Devon way,
Nor pick a posy in a lane
Down Somerset and Sussex way.
But though my bones unshriven rot
In some far distant alien spot,
What soul I have shall rest from care,
To know that meadows still are fair
Down Dorset way, down Devon way."

And if to keep those meadows fair and safe, a life or lives be required, we know there are and have been many willing to pay the price and say, "they are very proud and glad to do this thing for England's sake." It is difficult not to grudge the price, but in the words of one of them who has faced and made the great sacrifice, we can say of each and all :—

"Our country in the storm of war
Has found him fit to fight and die for her,
We lift our heads in pride for evermore."

THE LATE APPEARANCE OF AGGLUTININS IN PARATYPHOID A FEVER.

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(*A Report to the Medical Research Committee.*)

(*Continued from p.* 152.)

The Late Appearance of Para A Agglutinins.

Previous work on the subject gives one the impression that not only are the agglutinins of para A bacillus produced in small amount but also that they disappear very early in convalescence. Thus Walker Hall [2] makes the statement: "General evidence seems to point to the fact that in the later weeks of paratyphoid fever the paratyphoid titre falls rapidly. This higher agglutination (i.e., than the inoculation agglutinins) must be read therefore in association with the early weeks of the disease." A perusal however of Hall's own records (Tables A and B) shows that the agglutinins for both para A and para B are present in relatively large amount from the fifth to the twelfth weeks, while their persistence, to judge from those tables, is more marked than his deductions would suggest. A study of the cases recorded in the present paper in relation to the time dating from the commencement of the pyrexia, at which there is the maximum production of para A agglutinins is summarized as follows:—

TABLE III.—Analysis of the Thirty-three Cases in reference to the Date of Appearance of the Highest Para A Titre.

	Series inoculated with T.A.B.	Series inoculated with T.V.
First three weeks	Nil	Nil
Fourth and fifth weeks	6	5
Sixth and seventh weeks	8	5
Eighth week onwards	5	4

It is seen that the highest para A titre in the great majority of the cases in both the T.A.B. and T.V. series occurs between the fourth to the seventh weeks inclusive. Dreyer [1] has called attention to the fact that in his series of cases the maximum agglutination is reached about the twentieth day, although he insists that in para A cases the titre is often very low. In the present records, at this stage of the disease, the agglutinins are usually present; but when the end titre is considered and when the cases are followed up into the later weeks of convalescence a much higher agglutination titre is found to be recorded. Thus in none of the present series of cases is the maximum agglutination reached earlier than the fourth week, while from the fourth to the seventh week inclusive the titre is maintained at a high level. In the several records of individual

cases of paratyphoid infections quoted in their paper by Martin and Upjohn [4], an equally high agglutination in the fourth and fifth weeks of the fever is seen to have been obtained. These observations appear to have an important practical bearing. There are doubtless many cases of slight and transient fever, due to a para A infection, in which an agglutination test within the first fifteen to twenty days has proved negative, even in low dilutions of the serum, and which owing to the indefinite clinical manifestations have been diagnosed "non-enteric." In this way a certain proportion of potential paratyphoid carriers may be missed, through reliance being placed on laboratory examinations confined to the period of pyrexia, or early convalescence, while serological investigations, if continued into later convalescence, may prove that a paratyphoid infection is present. In this connexion, the present series of cases affords several good illustrations. One of the most marked examples is that of Case 14, Table II. Here we have a clinically mild paratyphoid infection in an uninoculated subject—temperature of ten days' duration with concomitant symptoms, rose spots, etc. Agglutination reactions on the third and fourteenth days were quite negative to *B. paratyphosus* A, the figures for *B. typhosus* being ten and five units respectively. The agglutination test was repeated on the twenty-first day, when para A agglutinins were present, viz., thirty units, and on five subsequent examinations up to the eleventh week from the commencement of the illness the agglutinins for para A remained persistently present. The same delayed appearance of the specific agglutinins is seen in cases of long continued fever. For example, Case 4, Table I, is a continued fever of twenty-six days' duration which was clinically extremely suggestive of an infection of the enteric group. Examinations on the second and fourth week were completely negative to para A agglutinins, and it was only in the light of previous experience that we were led to do a later examination, when the para A titre was found to equal 140 agglutinin units and a fortnight afterwards 325 units. The organism in this case was not isolated from either blood culture or fæces. Case 17, Table I, is another case in which no para A agglutinins were obtained until the fifth week. This patient was very ill until the sixth week, for after a typical sixteen days' fever there followed a continuously intermittent temperature from the twenty-fourth to the forty-fifth day, para A being isolated from the fæces during this relapse. Such cases as these show the futility of basing any laboratory opinion on single and casual agglutination reactions in persons inoculated with typhoid or T.A.B. vaccine, while even in a series of tests the fallacy involved in a negative report unless correlated with the clinical course of the affection is sufficiently apparent.

Moreover from a statistical point of view there is the obvious error of basing comparative figures on the incidence of typhoid and paratyphoid fevers on agglutination tests done during pyrexia or early convalescence where blood cultures or bacteriological examinations of the excreta have

either been negative or neglected. This is partially due to the increase in *B. typhosus* agglutinins which precedes the production of those of para A. In the present series of cases recorded in Tables I and II this group reaction for *B. typhosus* has been a remarkably constant feature, and further demonstrates how unsatisfactory it is to base a diagnosis of the type of enteric infection on agglutination reactions within four weeks of the commencement of pyrexia. Thus to take Case 19, Table I, the agglutinins for *B. typhosus* on the twelfth day of illness equalled 222 units—a relatively high figure—while those for para A were fourteen units. In the fourth week *B. typhosus* had fallen to 22 units, while para A had increased to 57 units, and to 288 units by the fifth week. Curves showing a similar variation may be seen in Charts A, B, and E, which are taken from Cases 1, 2, and 17 of Table I. The possibility of this statistical fallacy has repeatedly revealed itself, for quite a number of cases admitted as "typhoid fever"—the diagnosis having been based on agglutination tests carried out during the acute stage in Mesopotamia—have been found on later examination to be really cases of paratyphoid A fever.

The Extent of Production of Para A Agglutinins.

The extent of the production of Para A agglutinins is usually considered to be slight. Although it is true that the low dilutions of the serum are a considerable aid to their detection during the earlier stages of the fever, yet the neglect of the study of their variation later in convalescence has led to an erroneous idea as to their amount. Thus Firth [7] says, "Even under the most favourable circumstances the patient's serum rarely gives a positive reaction for the A variety in higher dilution than 1 in 100. Often *B. typhosus* agglutinins are marked while Para A is not agglutinated by 1 in 10 dilutions of the serum." A perusal of the present records and charts appears to show that Para A agglutinins are produced in many of the cases in relatively large amount, especially at some period between the fourth to the seventh week. Although there is a comparatively feeble production of Para A agglutinins in the early stages of the fever, yet frequently at a later period the agglutinins are quite as strong as those agglutinins of *B. typhosus* which occur in the early stage of paratyphoid fever, or in typhoid fever itself. Hence such statements as "the variable and comparatively feeble production of agglutinins in paratyphoid fever, especially Para A" [7] seem to require considerable modification.

In view of the fact that previous work on the subject has been carried out on patients who had either never been inoculated or who had received simple typhoid vaccine, it was thought that the triple vaccine might in some way contribute to this delayed but stronger production of Para A agglutinins. Support is given to this suggestion by the relative diminution of inoculation agglutinins which is found to occur in a certain number of the cases, followed by the preliminary rise of *B. typhosus* agglutinins previous to Para A asserting itself. This initial diminution in agglutinins

may be analogous to the "negative phase" phenomenon. Our ignorance of the processes on which agglutination depends prevents any dogmatic statements, but our observations on the response of inoculation and infection agglutinins suggest that inoculation may play an important rôle in this delayed appearance of Para A agglutinins. A consideration of the average time when the agglutination titre is highest in patients inoculated with T.V. and T.A.B. respectively does not show any difference either in the date of appearance or amount of agglutinins produced. The average period for the T.A.B. series is 6·4 weeks, and for the T.V. series 6·5 weeks. A comparison between the mass agglutinins during (1) the first four weeks of the illness and (2) the period from the fourth week onwards of the cases in Tables I and II is so untrustworthy that no deductions can be made with any confidence. Apart from the fact that it has not been possible to make agglutination tests with any regularity during the first three weeks, and therefore no average can be struck for the mass agglutinins during that period, there is the fallacy of attempting to draw conclusions from a comparison of those two intervals, since Para A agglutinins reach their maximum production from the fourth to the seventh week, and the mass figures will depend on whether the rising Para A titre and the preliminary increase in *B. typhosus* agglutinins fall immediately before or after the commencement of the fourth week.

The Question of the Relative Diminution or Absence of the Inoculation Agglutinins during Pyrexia.

The relative diminution of the inoculation agglutinins during pyrexia in a number of the present series of cases has already been mentioned. This observation has an additional interest in its bearing on Tidy's [8] much discussed assertion that the inoculation agglutinins of *B. typhosus* are markedly reduced or entirely disappear in the early stage of febrile conditions, and that a positive agglutination test to *B. typhosus* after the fifth day of fever has the same value in an inoculated as in an uninoculated person. An analysis of the cases which had been inoculated with T.A.B. vaccine shows that agglutination reactions during the first and second weeks of the pyrexia have been obtained in twelve cases. Five of these show complete absence of all agglutinins during the pyrexia. Three others show a marked diminution, while of the remaining four the figures are either doubtful or suggest no diminution. The average interval that has elapsed since T.A.B. inoculation in the case of those showing complete absence of agglutinins is twenty weeks, as compared with an average of twenty-three weeks for the others. These figures certainly suggest that that there is a considerable reduction and occasional disappearance of the inoculation agglutinins in a proportion of the cases, small though the numbers be. It is to be noted that this reduction is immediately followed by an increase, usually considérable, in the *B. typhosus* agglutinins as a

result of the stimulation produced by the paratyphoid infection. An analogous phenomenon, we find, is mentioned by Ainley Walker [9] as occurring in experimental work in animals. If an animal which has been immunized some weeks or months before with a particular micro-organism be inoculated with a non-lethal dose of a vaccine prepared from some other micro-organism, its agglutination titre for the first organism exhibits a new rapid rise of greater or less extent and pursues a curve similar to the ordinary inoculation curve. "Immediately upon the second inoculation there may occur in a proportion of cases a moderate and purely temporary fall in titre probably somewhat similar in character to the negative phase of the opsonic index and passing off within a few days to be followed by the rapid rise just mentioned." Walker further notes that if a longer period has elapsed, e.g., five months before heterologous inoculation is given, there may be no change of any kind in the inoculation titre, though if any change does take place its main feature is a rise in titre.

Apart from this possible interaction between the inoculation and the Para A infection agglutinins, nothing in the clinical condition can be suggested as accounting for this irregular disappearance or reduction of agglutinins. No evidence from any of the records of the present investigation, however, can be obtained to support Tidy's assertion that a positive agglutination reaction to *B. typhosus* after the fifth day of pyrexia has the same value in an inoculated as in an uninoculated subject; moreover, numerous febrile cases of non-enteric origin showed no diminution of the inoculation agglutinins resulting from previous T.A.B. inoculation in tests carried out during the acute stage as compared with the results obtained during the afebrile period; while a study of the agglutination reactions in a series of malarial patients, who had previously had T.A.B. vaccine, revealed no difference between the agglutination titre of the serum taken during the febrile paroxysm, and of that obtained during the apyrexia of convalescence. It is to be noted that in Table I no reduction in the agglutinin values is apparent after the second week. Indeed only the cases in which investigations were made during the first two weeks have been considered in the present connexion. Hence it may have been that in some of the previous work on this subject, a diminution or absence of agglutinins has been missed through the serological test not having been carried out at a sufficiently early stage of the affection.

The Agglutination Curve of B. Typhosus in Paratyphoid Infections.

Little need be said regarding the rise in the *B. typhosus* agglutinin curve which precedes or is synchronous with the increase in the production of Para A agglutinins in most of the present cases. This was first pointed out in 1911 by Grattan and Wood [3], and has been confirmed by subsequent workers. Its chief interest appears to be its relation to the reduction in the agglutinin content which immediately precedes the rise, and to the

possible light sheds on the interaction between inoculation and infection agglutinins. But what is also to be noted from the protocols is the irregularity in the agglutinin curve of *B. typhosus* which appears to be largely due to a second rise which occurs very often subsequent to the agglutinin titre for Para A reaching a low level and which tends to give the whole curve a "saddle-back" appearance. This rebound is difficult of explanation, although all the evidence points to the inoculation agglutinins being the factor thus influencing the curve. In this connexion attention may again be drawn to the first appearance of para B agglutinins very late in convalescence (twelfth to sixteenth weeks) in a number of the cases which had been inoculated with T.A.B. and which had never shown any trace of those agglutinins at an earlier period of their investigation.

It has, of course, to be remembered that certain of these variations are "mean variations" in that they represent the next dilution above or below, and no attention need be paid to those "one tube differences." Yet some of the alterations in agglutinin content are most perplexing when the behaviour of the curve is being studied. In several of the cases in which the diagnosis of para A has been confirmed by isolation of the organism, sudden drops in the amount of para A agglutinins occur, to be followed by an equally sudden and unexpected rise for which no explanation can be assigned from a consideration of either temperature chart or clinical condition. For example, in the case of No. 5, Table I, in which para A was isolated from the fæces, the figures for para A in standard agglutinin units are :—

Week :	7th	9th	11th	12th	13th	15th
Paratyphoid A agglutinins ..	510 ..	510 ..	145 ..	250 ..	580 ..	58

The history and clinical condition of these cases were always carefully considered, while the occurrence of all such divergences led to the repetition and careful controlling of the agglutination tests. Incidentally it may be mentioned that in connexion with an investigation at present in progress we have repeatedly examined the agglutination reactions of forty of the men of our own personnel, the date of whose inoculation with T.A.B. vaccine was accurately known. As many as five tests in certain instances have been carried out over a period of nine months. A gradual diminution in the amount of the inoculation agglutinins in any individual case was perfectly apparent, but the very marked differences and striking contrasts between the figures obtained for men inoculated at the same time, and from the same bottle of vaccine, has convinced us that the average figure for the agglutinins obtained from such divergent results cannot be taken as representing the probable agglutination titre of any individual's serum at any given period after inoculation.

The Relation of Pyrexia and of Relapses to the Production of Agglutinins.

The elucidation of some of the irregularities of the agglutinin curves has been attempted by a study of the relation of the end of the fever and of the occurrence of relapses to the agglutinin content. A consideration

of the records with regard to the relation between the pyrexial period and the date of the maximum agglutination titre of the serum shows that the period varies from a few days to seven weeks, the average being approximately three weeks. The relation, however, is more evident in cases of long-continued pyrexia. In these instances the para A agglutinins are correspondingly late in their appearance and serological diagnosis is for a considerable period indefinite in spite of a series of agglutination tests. Of this, Case 17, Table I, is probably the best example. The patient ran a continuous temperature for over six weeks. Examination during the first and third weeks gave a figure of 110 and 220 units for *B. typhosus* agglutinins, while those for para A and para B were absent. The patient had been inoculated with T.A.B. vaccine forty weeks before. By the fifth week the titre for para A had reached a considerable height, viz., 285 units, and this increased until the record for the eleventh week was 500 units, after which there was a gradual fall, 37 being the figure for the fifteenth week. It may be noted that in this case the para A bacillus was obtained from the fæces during convalescence.

Relapses occurred during the convalescence of five of the cases, viz., Nos. 3, 5, 6, 11, of Table I, and No. 1 of Table II. The exact periods of the return of pyrexia in these cases have been compared with the date of the maximum production of agglutinins as well as with the agglutinin curves as a whole. No connexion can be detected between the relapse and either an increase or decrease in agglutinins. Indeed, in Case 1 of Table II, the relapse is synchronous with the highest figure recorded for para A, as it occurs from the thirty-second to the thirty-ninth day, while the maximum agglutinin production takes place during the fifth and sixth weeks. However, if one considers the usually accepted theory of the etiology of relapses that they are due to an infection with a different but closely allied organism, then, unless there be a production of co-agglutinins, no inter-relation between the pyrexial relapse and the agglutinin curve would be expected to exist.

It is with pleasure that I express my thanks to Lieutenant-Colonel A. W. Sheen, R.A.M.C., Officer Commanding ——General Hospital, for the facilities placed at my disposal for the carrying out of this investigation, as also for free access to the clinical records of the hospital. To Pte. N. Greenwood, R.A.M.C., I am greatly indebted for his assistance in the carrying out of the tests, for his help in the compilation of the records, and for his enthusiastic interest in the progress of the work.

Conclusions.

(1) The present study of the behaviour of the agglutination curve is based on a series of thirty-three acute cases, mostly paratyphoid A fevers, from fourteen of which the infective organism has been isolated either by means of blood culture or from the fæces. The agglutination reactions have been carried out at intervals from the first to the twentieth week

dating from the commencement of the fever, while in every instance the agglutinin titre has been worked out to its end-point.

(2) The agglutinins for *B. paratyphosus* A are in a proportion of cases of paratyphoid A fever very late in their appearance. In the present series of thirty-three cases the highest agglutinin-titre has never been recorded before the fourth week from the commencement of pyrexia, while in twenty-two of the cases the maximum agglutinin content did not occur before the sixth week.

(3) Although the presence of para A agglutinins may occasionally be revealed by agglutination tests carried out in low dilutions of the sera, yet this is by no means constant, for those agglutinins appear to be sometimes altogether absent until a comparatively late period of convalescence when they may be found present in large amount. It would appear as if the reason why the maximum agglutination titre for para A has always been considered to be relatively low, is that its estimation has not been followed into convalescence.

(4) A certain proportion of potential paratyphoid carriers may thus be missed through reliance being placed on negative laboratory tests confined to the period of pyrexia or early convalescence, whereas serological investigation, if continued into later convalescence, may prove the presence of a paratyphoid infection.

(5) In two-thirds of the present cases in which agglutination tests have been carried out during the first and second weeks of the pyrexia, a marked diminution and occasional disappearance of the inoculation agglutinins has been found to occur. In cases of malaria and other acute non-enteric febrile conditions no such diminution of the agglutinins resulting from previous T.V. or T.A.B. inoculation has been detected when compared with the agglutination reactions obtained during the afebrile state.

(6) A marked ascent in the *B. typhosus* agglutination curve usually precedes or is synchronous with the appearance or increased production of para A agglutinins. This group reaction for *B. typhosus* has been a remarkably constant feature in both the T.V. and T.A.B. series of cases.

(7) No relation is to be detected either between the occurrence of relapses and an alteration in the agglutination curve or between the end of the pyrexia and the date of record of the maximum agglutinin content.

(8) The increase in *B. typhosus* agglutinins which seems invariably to precede the ascent in the para A curve, coupled with the frequent late appearance of para A agglutinins, shows the futility of basing any statistics on the relative incidence of typhoid and paratyphoid fevers diagnosed from single and casual agglutination tests carried out during either pyrexia or early convalescence in cases where blood cultures have either proved negative or been neglected. This conclusion applies to persons inoculated either with typhoid or triple vaccine; while even after the performance of a series of agglutination reactions there may be a fallacy involved in a negative report unless correlated with the clinical course of the infection.

(9) These observations suggest that in suspected cases of fever of the "enterica" group in subjects inoculated with T.A.B. vaccine, the value of the agglutination reaction as an aid to the rapid and accurate diagnosis of the specific infective organism is for practical purposes nil. If, however, it be possible to plot out the agglutination curve obtained by the performance of a series of tests repeated at short and regular intervals and continued well into convalescence the scientific interest of the reaction may be considerable in the study of the inter-relationship of inoculation and infection agglutinins, and of the processes on which the agglutination phenomenon depends.

REFERENCES.

[1] Dreyer. *Proc. Roy. Soc. Med.*, 1915, vol. ix, No. 2.
[2] Walker Hall. Journal of the Royal Army Medical Corps, 1916, vol. xxvii, p. 259.
[3] Grattan and Wood. Journal of the Royal Army Medical Corps, 1911, vol. xvii, p. 149.
[4] Martin and Upjohn. *Brit. Med. Journ.*, 1916, vol. ii, p. 313.
[5] Sladden. *Lancet*, 1916, vol. ii, p. 272.
[6] Dreyer, Walker, and Gibson. *Lancet*, 1915, vol. i, p. 324.
[7] Firth. Journal of the Royal Army Medical Corps, 1912, vol. xiv, p. 157.
[8] Tidy. *Lancet*, 1916, vol. i, p. 241.
[9] Ainley Walker. *Lancet*, 1916, vol. i, p. 17.

DYSENTERY—A CLINICAL STUDY.

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The following report is based upon the records of some 600 cases which were admitted into the dysentery wards of the General Hospital at Alexandria, between May, 1916, and February, 1917, and were under the care of the writers.

The cases were of very different character; some were admitted into hospital on their arrival from England acutely ill. Some, also acutely ill, came from local camps on the Western Front; while others were admitted from Salonica, India, Mesopotamia, or other hospitals in Egypt, more or less convalescent, suffering from acute relapses, or with chronic dysentery.

A certain number of patients were suffering from their first attack of dysentery. Others had suffered previously, and in a few the disease was of old standing, and must have been present for many months. The majority were otherwise healthy, but a minority were infected as well with malaria and paratyphoid fever; or had previously had attacks of these diseases, or sunstroke, sandfly fever, etc.; while in another group visceral disease of varying kind co-existed.

The cases were thus in no way comparable and we have in consequence laid little stress upon statistics. We may, however, state that entamœbæ were detected in the stools in more than 58 cases, a dysentery bacillus in 132 cases, and lamblia in 50 cases.

One is apt to forget that dysentery—the bloody flux—is a symptom of many diseases rather than a disease in itself, although at times epidemics of dysentery of uniform origin may occur. The type of the infection may, however, vary somewhat suddenly even in the same place. At Cape Helles for instance, amœbic dysentery was rife during July, August, September and October; while at Suvla Bay the main cause was bacterial (Captain W. Campbell). The interchange which occurred among the troops on the Peninsula, however, led to cross infections, and before the evacuation the cases in either place might be bacterial or protozoal; or a double infection might be present.

The movement of troops in this world war is so extensive that diseases indigenous to one place may be readily imported into another. So that in medicine as with arms all *ante bellum* standards have been upset and war conditions necessitate an avoidance of *a priori* theories. Colonel Sandwith,

for instance, tells us that it has been anticipated that the dysentery in Alexandria in the autumn would be chiefly protozoal whereas it has been mainly bacterial. Captain Lumb tells us that while the dysentery in East Africa prior to the war was wholly amœbic, the bacillary affection has been frequently seen there since the arrival of the Indian troops in the autumn of 1914. One of us had a patient under his care in the autumn of 1914 who came into hospital from the trenches on the Aisne, suffering from amœbic dysentery; and cases have been recorded where it has occurred in England in men who had never been away from home. The persistence and the latency of protozoal infections is responsible for a group of cases where an infection acquired in one country shows evidence of its existence when the carrier has reached the other side of the globe. The "Aisne" patient, for example, had had an attack of dysentery at Lahore eighteen months previously, and the infection had probably never been exterminated although all the symptoms remained in abeyance. Comparable histories are, of course, well known to occur in such diseases as malaria and syphilis.

This point cannot be too strongly emphasized as successful treatment of dysentery can only be ensured by an accurate diagnosis of its cause in the individual case. This can rarely be made in the wards. Laboratory findings are of great value, but pitfalls also exist in the laboratory, and its negative reports are of little value. The history of the illness, previous illnesses, and the itinerary of the patient are probably of as great practical importance; but all these factors, the history, the symptoms, and the laboratory reports, must be carefully correlated to ensure a correct solution. Even then one is often in doubt, and empirical treatment, with all its disadvantages, has to be instituted.

Amœbic Dysentery.

The protean character of the symptoms of amœbiasis of the intestine is well known, but is not perhaps sufficiently recognized. A very large percentage of the population where amœbic infections are endemic are carriers, with presumably a small local lesion in some part of the bowel so trivial in its degree that no evidence of its presence exists during life. Captain Dunne tells us that he saw several such cases (from the Peninsula) on the post-mortem table during 1915, the patients having succumbed to gunshot wounds. Strong quotes some statistics, and others are available from the recent literature. Strong and Musgrove in the Philippines found amœbæ in the stools of healthy individuals in four per cent. Musgrove found them in 101 of 300 prisoners in Manila, though only 61 were suffering from dysentery. Craig found them in 65 of 200 cases. Wenyon and O'Connor (Alexandria) found them in 5·3 per cent of the healthy troops, in 1·8 per cent of the prisoners in Gabbari Military Prison, and in 13·7 per cent of the Egyptian civil prisoners in Hadra. The incidence

of the infection is very considerable, too, among men who are convalescent from an attack of dysentery. Walker Hall, Adam, and Savage found them in 9·08 per cent, and Wenyon and O'Connor in 10·8 per cent of convalescent patients on their arrival in England. The incidence is not confined to cases of dysentery, but also obtains in enterica convalescents. Walker Hall's figures show 10·06 per cent amœbic carriers among this group.

At one end of the chain lies the carrier with no symptoms of intestinal disturbance; at the other end the patient with acute dysentery. The intervening links are represented by cases presenting an infinite variety of symptoms. The difference depends upon several factors, the site and the degree of the lesions, and the presence of associated bacterial infection.

Tenesmus, for instance, depends upon the involvement of the lower part of the large bowel, and is absent when this is not involved. Diarrhœa is mainly due to intestinal catarrh of very varied bacterial origin. The presence of mucus in the stools predicates inflammation of intact, i.e., undestroyed mucous membrane. Blood is present if ulceration is progressive, or catarrh severe. An uncomplicated ulceration of the cæcum and ascending colon presents very different symptoms from those of widespread involvement of the colon generally, with some associated catarrh.

The whole series may be seen in the post-mortem room: the small uninflamed ulcer; the ulceration surrounded by acute catarrh; and the gut almost wholly devoid of mucous membrane, and necessarily incapable of secreting any appreciable amount of catarrhal products.

We are becoming somewhat sceptical as to the existence of pure acute amœbic dysentery, i.e., amœbiasis unassociated with bacterial infection. We have seen several such cases where the dysenteric symptoms subsided under general treatment before the entamœbæ were detected in the stools, and appropriate treatment instituted. And everyone knows that amœbiasis may exist without any evidence of the gastro-intestinal disturbance, and may not be recognized until an hepatic abscess or the rupture of an ulcer occasions notable distress. In one of our cases dysenteric symptoms were absent though death was due to the rupture of an amœbic ulcer. In this case the patient was admitted from Mesopotamia with a diagnosis of malaria, and after ten days' residence was sent to a convalescent hospital. A fortnight later fever recurred and he was admitted again to the wards on September 9, 1916. He was then seriously ill with a high temperature which frequently reached 105° F. *Bacillus paratyphosus* A was isolated from the blood, and the clinical symptoms were those of enterica. There was little or no diarrhœa until the end of September, when he became dull, lethargic, and semi-comatose, and incontinence of fæces ensued. A little mucus was now occasionally present in the stools, but these never suggested the presence of dysentery, and entamœbæ were not detected at the single examination that was practised. On October 13, 1916, signs of peritonitis made their appearance, but his general condition negatived operative

measures. He died on October 17, 1916. Post-mortem examination revealed widespread amœbic ulceration of the large bowel.

The post-mortem findings iu this case were unexpected as the existence of amœbic dysentery was not suspected during life in view of the character of the general symptoms and the positive blood culture. There was never any blood in the stools, and mucus was only present during the terminal stages of the illness, and never in large amount.

In many of our cases the history was one of diarrhœa, or alternating diarrhœa and constipation following dysentery, rather than of chronic dysentery. A medical man, for instance, had a mild attack of dysentery at Cape Helles, in November, 1915, which did not necessitate hospital treatment; diarrhœa for three days in December, a recurrence in March, and frequent repetitions subsequently which only ceased after the stools had been examined in May, the *Entamœba histolytica* recognized, and appropriate treatment instituted. Another patient gave a history of an attack of dysentery in June in Mesopotamia, which lasted for some weeks, and was succeeded by chronic diarrhœa which sometimes ceased for many days at a time. His stools however, were never formed, and in November contained *E. histolytica*. Less commonly the symptoms are those of diarrhœa from beginning to end. One patient had diarrhœa on his way to Egypt in April, 1915, at Chatby in May, and on four subsequent occasions, none of which necessitated treatment in hospital. In October, 1916, it recurred so severely that he had to go to hospital, where, however, he was only detained for six days, and then sent to Montazah Convalescent Hospital. The diarrhœa recurred at once, and examination of the stool revealed *E. histolytica*. The attacks of diarrhœa were never severe, but might last for a fortinght at a time. He had no tenesmus, and never to his knowledge passed either blood or mucus with the stools.

A double infection is by no means uncommon, and occurred in twelve of our cases, entamœbæ and a dysentery bacillus being detected in the stools. But in amœbiasis, associated with dysenteric symptoms, the majority of patients show no dysentery bacilli. Other bacteria, however (*B. Morgan*, *B. fæcalis alkaligenes*, *B. paracolon*, *B. C.L.A.* 1, *B. C.L.A.* 2,[1] streptococci, etc.), are commonly present, sometimes in enormous numbers, and, whether capable or not of originating dysenteric symptoms in normal intestines, may quite conceivably produce them in a bowel already invaded by entamœbæ. And this, we think, is the explanation of the variation in the symptoms met with in amœbiasis, variations which are dependent upon difference in the site and the degree of the amœbic invasion; and in the kind and the mass of the bacterial infection.

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[1] C.L.A. type of bacilli. A number of organisms of the Morgan group of intestinal bacilli have been isolated at the Central Laboratory, Alexandria, and have been designated *C.L.A.*, *No.* 1, *No.* 2, etc. These organisms are feebly pathogenic to animals, and are probably diarrhœa producers in man.

The failure to recognize the double character of the cause in cases where it exists may have a tragical ending. In the majority of such cases the subsidence of the febrile and toxic symptoms unaccompanied by the usual associated improvement in the character of the stools suggests the presence of the protozoal infection, or this may be recognized on repeated examinations of the stools, and appropriate treatment secures the desired result. In one case we failed to appreciate this point.

The patient, a seaman on a trawler, dined in town on October 10, 1916, and acute dysentery succeeded next day, the abdominal pain being severe and the tenesmus constant. When he was admitted into hospital on October 10, 1916, he was much exhausted and looked toxic and ill. The tongue was thickly coated, the abdomen flat and mobile but tender in the iliac fossæ, and the stools were numerous and composed of bloody mucus. The pulse was febrile and numbered 101. The temperature ran between 100° and 102° F. In the days succeeding his admission his condition improved to some extent. The fever persisted, but the stools became less frequent and fæcal and the blood lessened in amount; on October 14, 1916, some small superficial sloughs were recognized in the stools. On October 19, 1916, he seemed better, the stools being less frequent and less fluid, with no blood or mucus, though some exudate was present, while his general strength was well maintained though he was appreciably thinner. The abdomen, too, was slightly distended and occasionally he had some pain. During the ensuing week, however, he continued to lose ground. The fever persisted, assuming a hectic character and being accompanied by severe sweating. The diarrhœa continued, the stools still retaining the same character. Towards the end of the month vomiting ensued at intervals, the diarrhœa continued, and the abdominal pain recurred. The abdomen became slightly more distended, but no evidence of general peritonitis was manifest. He died of cardiac failure on the morning of November 1, 1916. Post-mortem examination showed a widespread amœbic ulceration of the colon with an acute bacterial infection of the unaffected mucous membrane.

The lower three feet of the ileum were also acutely inflamed. The whole course of the illness suggested a bacterial cause—the sudden acute onset, the evident toxæmia and the continued pyrexia; and this seemed confirmed by the result of the examination of the stools which failed to reveal the presence of any protozoa, while a dysentery bacillus—not fermenting mannite—was isolated on culture from the stools on October 12, 1916. On subsequent examination dysentery organisms were absent, but *B. Morgan* was isolated on several occasions, and an intestinal infection of non-specific character engrafted upon a dysenteric lesion was assumed to be the cause of his illness, the enterica group having been excluded by examination of the urine, the stools, and the blood. The protozoal infection was not suspected and was not treated. The patient was definite that his illness only commenced upon October 7, 1916, though the condi-

tion found post mortem must have existed for some considerable time prior to this date, the amœbiasis being thus latent. Death, of course, ensued as a direct result of a bacterial infection, but this might perhaps have been resisted if emetine treatment had been instituted on admission, and the protozoal infection overcome.

One other patient in this series died, but not as the result of dysentery. He was admitted into hospital from Mesopotamia and could give no account of his illness, as he was then mildly delirious. He died two days later. Post-mortem examination revealed a widespread pulmonary tuberculosis and one or two small healing ulcers (probably of amœbic origin) in the colon. A malarial infection was also present.

The diagnosis of amœbic dysentery is beset by many difficulties. In a general way the onset of symptoms is subacute or insidious, the course is essentially chronic, fever is absent or slight in degree (100° to 101° F.), and there are no toxic symptoms such as headache, malaise anorexia, prostration, etc., the picture contrasting strongly with acute cases of the bacillary type. But the onset may be acute, fever high, and general symptoms severe in cases where a bacillary infection is superadded, and all these may be absent in the milder bacillary infections.

An acurate diagnosis can only be made by microscopic examination of the stools. Macroscopic examination is insufficient, for in amœbiasis any type of stool may be present, and the only real test is the discovery of the *E. histolytica*.

A single negative examination is of little value, and in our cases the parasite was only found at the *first* examination in sixty per cent. In several instances it was only detected at the third or fourth, and in one case at the eighth examination. This is by no means surprising when we consider the relative bulks of the stool and of the morsel examined. The stools, too, must be fresh and clean, for cold and prolonged exposure to the atmosphere rapidly destroy the amœbæ, a result which also follows the admixture of stools and urine, and treatment by emetine. Microscopic search should always be made, too, in evident cases of bacillary dysentery, for the infection is often mixed. A laxative should be administered in every case and mucus, exudate, or sloughs of the mucus membrane examined in particular.

It seemed possible that the failure to recognize entamœbæ in the stools might be due in part at any rate to the co-existence of a bacterial infection destroying the parasites. In twenty-one cases in which entamœbæ were found the same stool was examined bacteriologically. In five cases a heavy bacterial infection was present (*B. dysenteriæ* mannite fermenter, *B. dysenteriæ* non-mannite fermenter, *B. fæcalis alkaligenes*, *B. paracolon* A., *B. C.L.A.* 1). In sixteen cases abnormal bacteria were absent.

In 23 of our cases (*E. histolytica* 18, *E. coli* 5), a protozoal infection was not recognized on the first examination of the stools. The bacteriological examination of these stools showed negative results in 13 cases,

but positive results in only 10 (*B. dysenteriæ* mannite fermenter 5, *B. dysenteriæ* non-mannite fermenter 1, *B. paracolon* A 1, *B. C.L.A.* 6, *B. fæcalis alkaligenes* 1, and streptococci 1). The other causes which have been suggested as reasons for the failure are thus more important than a coincident bacterial infection.

Another suggestion indicative of a protozoal cause of active dysentery is the presence of *E. coli* in the stools. We have been led to this conclusion by the satisfactory result of the administration of emetine in such cases, but we are unfortunately unable to give statistics upon this point. Mr. Savage, however, has kindly permitted us to publish his figures, which show that a double infection with histolytica and coli is nearly three times as common as a pure histolytica infection.[1] A pure coli infection is, however, more than twice as common as the double infection, so that the indication is merely suggestive. In acute dysentery, however, a pure coli infection is not quite twice as common as the double infection, and *E. histolytica* was present in forty-three per cent of the cases in which entamœbæ were found.

In cases where microscopic examination is impossible, and in fact in every case, due attention should be paid to the other data. The probable source of the infection and the nature of the dysentery there prevalent are particularly important. Cases which originated on the Peninsula, especially at Cape Helles, and in Mesopotamia, particularly if the early symptoms were slight and did not necessitate treatment in hospital, are most frequently amœbic. Recurring attacks of dysentery, chronic dysentery, and dysentery which fails to react to general treatment, and dysentery associated with enlargement of the liver, hepatitis and perihepatitis, are most generally amœbic in origin. Repeated examination of the stools, too, may reveal the cause even if the symptoms have subsided, and in one of our cases *E. histolytica* cysts were found for the first time in the first *normal* semi-solid stool passed after the commencement of the illness.

The treatment of amœbiasis of the intestines consists in the administration of ipecacuanha or emetine in sufficient doses over a sufficient length of time. The well-known discomforts produced by the administration of large doses of ipecacuanha given by the mouth have led to the almost universal use of emetine administered hypodermically. The current routine is to give twelve grains of emetine hydrochloride in one-grain doses at night. In a large number of acute cases this treatment is

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[1] Mr. Savage:—

	Pure *E. coli* infection	Pure *E. hist.* infection	Double infection
Alexandria: Dysentery cases ..	62	15	32
Bristol: Convalescent dysentery cases and convalescents	100	11	39
	162	26	71

successful, the symptoms lessening in severity after four to five days and rapidly disappearing, while the entamœbæ disappear from the stools. But in a considerable number of cases emetine given in this way has been shown to be insufficient, the entamœbæ reappearing in the stools, though the symptoms may be absent or trivial. In one of our cases twelve grains of emetine were given between June 8 and 19, amœbæ reappeared in the stools on August 1. In another case they were detected for the first time on August 12, though $12\frac{1}{3}$ grains had been given between July 21 and August 6. (The earlier examination had been made after emetine treatment had been commenced.) Our experience in this coincides with that of Wenyon and O'Connor.

In another group the dysenteric symptoms persist. This is most usually in cases where the illness is chronic or relapsing, and where presumably ulceration of considerable severity and extent still obtains. It seems reasonable in such cases to give ipecacuanha or emetine by the mouth in the hope of reaching organisms in the crevices of chronic ulcers which are out with the reach of the blood-stream. We therefore follow up the hypodermic course of emetine by a course of ipecacuanha given by the mouth in five or ten-grain doses for a fortnight. So far as we know our cases thus treated have not relapsed, but we are, of course, unfortunately unable to secure reliable data of the history of our patients after their discharge from hospital.

It seems necessary still to emphasize the fact that a "ten-day course" will not cure amœbic dysentery. It is well known that such protozoal infections as malaria and syphilis require *prolonged* treatment to ensure a cure, and amœbiasis also requires prolonged treatment, even after the dysenteric symptoms have completely disappeared. The presence of dysenteric symptoms in amœbiasis indicates *active ulceration* of the bowel, and, like gastric and duodenal ulcer, amœbic ulceration requires time to heal. The statistics of Wenyon and O'Connor with regard to emetine treatment, and those of Savage and Young with regard to the treatment by the double iodide, afford confirmatory evidence of the correctness of our reasoning.

The rapid disappearance of dysenteric symptoms in amœbiasis has in our opinion led to an unwise shortening of the period of treatment in hospital with the result that relapses have been frequent, and the period of absence from duty unnecessarily prolonged. To put it in another way, "a stitch in time saves nine." Recent infections respond rapidly to treatment, but recurring cases with deep and large ulcers have as a rule to be invalided home, and are in consequence absent from the field for many months. We are unable to give statistics of the average duration of treatment in hospital of our acute cases, but it must have been between five and six weeks. An earlier dismissal was rarely possible on account of either local or general symptoms, and we invariably kept them in hospital until they had been for a week on ordinary diet without discomfort. They

were then sent to a convalescent home for a fortnight before their return to duty.

We have been unable to obtain membroids or such like protection for the ipecacuanha, but we have found that it rarely occasions sickness if given with thirty grains of bismuthi carb., and five grains of sodii bicarb. about 9 o'clock at night and three hours after the last meal. The patient was in bed for at least thirty minutes before the dose was administered.

We have used salol coated tabloids of emetine with apparently good results, but we dislike using tabloids on account of the impossibility of ensuring their disintegration within the bowel. Our supply of the double iodide of bismuth and emetine was limited and only allowed its use in three cases; in two the result was satisfactory. The tabloids are keratin coated, and given immediately after meals sometimes excited a little nausea, but only rarely actual vomiting.

We have invariably kept our patients in bed *during* the emetine course, though they were subsequently allowed up for a few hours each day during the ipecacuanha course, if their general condition permitted. We have had no serious symptoms in any case, but our patients, if in poor health, have not infrequently complained of nausea, giddiness, weakness, etc., on exertion, and in consequence we have refrained from permitting any exercise. We have tried Wenyon's plan of giving emetine simultaneously by the bowel and hypodermically, but these general symptoms seemed intensified by this measure and we in consequence adopted the sequence detailed above, with satisfactory results.

Captain Lumb informs us that he obtained good results in East Africa prior to the War by continued treatment with emetine hypodermically. He gave it daily until the symptoms disappeared, and then twice weekly for a month, and once a week for another month. We have had no experience of this method of treatment.

Bacillary Dysentery.

The symptoms of bacillary dysentery are quite as varied and confusing as those of the amœbic variety.

In the typical acute case the onset is abrupt, the patient being suddenly seized with severe diarrhœa, accompanied by griping pains in the abdomen; and in the course of a few hours the stools lose their copious watery fæcal character, and become small in bulk, though even more numerous than before, and composed of blood, or blood and mucus. Tenesmus is extreme, and the patient refuses to relinquish the bedpan or to leave the latrine, while the abdominal pain continues, intensified from time to time with the passage of a stool. The abdomen, too, is exquisitely tender to the touch. And with these local symptoms there is fever, the temperature reaching 101° to 102° F., and all the usual signs of toxæmia, headache, anorexia, nausea, furred tongue, hot skin, and frequent bounding pulse.

On the second or third day his appearance is fairly characteristic. The face is flushed, and his eyes are languid, the patient being wholly absorbed in his own discomforts, and indifferent to his surroundings. But at the same time the brain is unclouded and the intelligence acute, and the dazed lethargic features of enterica are absent—though he will doze indefinitely unless aroused by a call to stool. The fever is usually remittent or intermittent, and rarely touches 103° F. Exhaustion is extreme from the pain, sleeplessness, and starvation; but the pulse is usually not unduly frequent, running about 90, and is of fair quality. An increasing pulse-rate, or one over 100, is of more serious significance than the height of the fever or the number of the stools.

The whole picture—the facies, the toxæmia, the fever, etc.—are those of an acute bacterial infection, in which gastro-intestinal symptoms are prominent.

The subsequent course of events varies greatly in different cases. In some the attack is short, the fever disappearing within forty-eight hours, while the diarrhœa rapidly ceases, and the blood disappears from the stools. In others the fever persists, and may last for a week, or rarely for a fortnight, while blood and pus and mucus continue present in the stools. There is no difficulty in these cases in recognizing the bacterial origin of the illness.

But in another group the symptoms can hardly be separated from those of the amœbic type. Two men were admitted into hospital on the same day from the same camp. One had arrived in Egypt from England on December 27, and on December 30 dysentery ensued, accompanied by considerable abdominal pain. His temperature on December 31 was 100° F., and the stools consisted of bloody mucus. On January 1 the fever and abdominal discomfort had gone, while the stools consisted of bloody muco-pus. On January 3 the blood had gone, and the stools were fæcal, with a little cellular exudate, which in its turn had disappeared on January 5. The recent arrival of the patient in Egypt, and the acuteness of the symptoms at the onset, made the diagnosis clear even before a dysentery bacillus was isolated on culture, and the absence of entamœbæ determined by the microscope.

The second patient had been taken ill on December 25 with similar symptoms, had gone sick on December 27, and was admitted on December 31. He had then no fever and no abdominal discomfort save in a slight degree when at stool; while the stools at first fæcal only showed the presence of blood and mucus on January 2, forty-eight hours after admission, and seven days after the onset of the symptoms. He had been in Egypt for a year, and had always been liable to diarrhœa though it was never severe, and had never necessitated his admission to hospital. A history of chronic diarrhœa, a subacute onset, an afebrile illness, but again due to a dysentery bacillus.

Diarrhœa, too, may be due to a dysentery bacillus. A man was admitted

to hospital on December 21 on account of diarrhœa, which had ensued two days previously. He said that he had passed some blood and slime on the morning of the day of admission, but the stools after admission were always fæcal, without addition, and after December 26 formed. The number of stools passed per diem after admission was 3, 1, 1, ——, 1, 1, 1, 1, but on December 23 a dysentery bacillus was isolated. Another man whose stools were examined in the course of an investigation into the flora of the stools in Egypt, and found to contain a dysentery bacillus, had had diarrhœa for a couple of days immediately before the stool—a normal one—was investigated. Dysentery carriers are by no means uncommon. The majority of the cases discovered had at some time suffered from diarrhœa or dysentery; but one man who had been on the Peninsula from September 15 until the evacuation, and subsequently in Egypt, and whose stools contained a dysentery bacillus on September 20, 1916, and on October 11, 1916, would not admit having ever had any diarrhœa or dysentery since he came East, and had never been off duty on account of illness save for a couple of weeks in June, 1916, when he had "inflammation of the lungs."

The same series, then, obtains in bacillary dysentery as in amœbic dysentery, and while the severe cases in the two groups present distinctive pictures, the milder forms are practically indistinguishable; in both diarrhœa rather than dysentery may prevail; and in both gastro-intestinal symptoms may be in complete abeyance.

Like others we have at times imagined that the character of the stools conveyed a definite indication of the cause of the illness. And arguing in some measure from comparison with the secretions in acute coryza, we have thought that mucus or muco-pus, streaked with blood, and fluid-purulent stools were characteristic of bacillary cases; while a copious crimson stool and a fæcal stool, studded with sago-like masses, were characteristic of the amœbic variety. But increasing experience has taught us like others that no reliance can be placed on such criteria, and that *every type of normal and abnormal stool* may be present with amœbic and with bacillary infections of the bowel. After all, mucus comes from inflamed mucous membrane, pus comes from the same source or from an ulcer, blood flows from a ruptured or congested vessel; and inflammation of the mucous membrane of varying degree, and ulceration, may and do obtain in both forms of the disease.

The general features of the illness, an epidemic character, batches of patients coming at the same time from the camp, an acute onset, high fever and severe toxæmic symptoms, are the most characteristic symptoms of bacillary dysentery, but the only sure test is the recognition of the specific cause in the stools. Extreme exhaustion, for instance, may closely simulate toxæmia, and a rough passage on a hospital ship from the Western Front so exhausted one of our patients that we had little doubt on his admission that his illness was bacillary, though it turned out to be a pure amœbic infection.

A point of considerable practical importance may be considered here. In more than half (58·8 per cent) of the cases with blood and mucus in the stools examined microscopically and bacteriologically, no dysentery bacilli or entamœbæ were detected, and the cause of the illness remained undetermined.[1]

It has been suggested that the absence of dysenteric bacilli from the stools is merely a question of the stage of the disease; that in dysentery the specific bacteria cannot be recovered from the stools after the first few days, as they either die out or become submerged in the general flora of the inflamed bowel. As Major Ferguson puts it, the ground may still be wet, though the shower has ceased.

It is quite true that mucus and blood and pus may persist after dysentery bacilli have ceased to be recovered. In one of our cases no dysenteric bacilli were isolated after the fourth day, though blood and mucus were present in the stools as late as the ninth day. In another case blood and pus were present on the eleventh day, though bacilli were absent after the ninth. But in other cases the bacilli may persist after blood and mucus and pus have gone, and when the stools are normal. In 15 out of 28 cases in which the stools were examined repeatedly, bacilli were present in the second week, and in 3 in the third week. In one case they persisted until the eighteenth day, and were found subsequently on the twenty-fifth. In three cases they had disappeared after the fourth day.

Their presence, too, or at any rate their recognition, may be intermittent. We have found them present on the fourth and fifth days, absent on the sixth, and present on the eighth and ninth; present on the sixth and seventh, absent on the eighth, and present again on the ninth day. Isolated observations are of little value, and repeated examinations are required if the bacillary cause is to be fairly excluded. But the number of cases in which they are not detected seems too large to be explained in this way, and their absence must be accounted for by other circumstances.

(*To be continued.*)

[1] Central Laboratory, Alexandria, April to December, 1916: 838 cases with blood and mucus in the stools were examined; 78 cases showed *E. histolytica*, and 278 *B. dysenteriæ* = 41·2 per cent; 173 cases showed atypical, i.e., inagglutinable *B. dysenteriæ*.

Clinical and other Notes.

ON A CASE IN WHICH A MACHINE-GUN BULLET WAS EMBEDDED IN THE WALL OF THE HEART, WITH OBSERVATIONS ON THE CARDIAC MOVEMENTS OF THE BULLET DURING SYSTOLE AND DIASTOLE AND THE TRANSLATION MOVEMENTS DURING RESPIRATION AND CHANGES IN BODILY POSITION.

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AND
Captain E. V. PHILLIPS.
Royal Army Medical Corps.
AND
W. JEVONS, M.Sc.

Pte. J. W. H. was wounded on September 29, 1917, while lying on his back, by a bullet from the machine-gun of an aeroplane. The healed wound of entrance is small and situated $1\frac{1}{2}$ inches below and $1\frac{3}{4}$ inches internal to the left nipple.

An X-ray examination of the chest taken in January, 1918, at the 5th Northern Hospital revealed the presence of a bullet at a depth of about five centimetres from the surface of the body apparently embedded in the wall of the left ventricle near the apex and moving with systole and diastole and with the respiratory movements of the diaphragm. The bullet lies with its point directed towards the mid-line slightly backwards, and during normal respiration somewhat upwards (see fig. 1).

On deep inspiration the point of the bullet travels downwards so that in addition to lying on a lower level the bullet assumes a horizontal position, while in deep expiration it returns to the vertical position with the apex pointing upwards and slightly inwards. These respiratory translation movements are quite independent of the to and fro systole and diastole intrinsic movements which will be described later.

The composite diagrams, figs. 1 to 7 represent actual tracings on the fluorescent screen drawn under the same conditions of position of tube and screen and on the same scale. In each of the diagrams the letter B represents the shadow of the bullet, H the left border of the heart, D the left crest of the diaphragm. The suffixed letters I and E represent the position at full inspiration and expiration respectively. Where the right border of the heart is indicated the line is traced in the inspiratory position. A mid-position of the bullet between systole and diastole is indicated by the broken line. N represents the position of the left nipple. The borders of the vertebræ are outlined in correct position but the rib shadows have been omitted for the sake of clearness. The relation of the ribs to the heart and bullet were determined by X-ray photographs.

The alternating cardiac movements somewhat blur the outline of the cardiac shadow and that of the bullet, but in as much as the diastolic interval considerably

exceeds in the aggregate that of systole the shadows formed by the bullet and the heart correspond approximately to the position assumed during diastole.

We may now consider all observed movements of the bullet under three heads:—

(1) *The Effect of Alterations in Bodily Position on the Position of the Heart.*—The level assumed by the bullet with the body in the erect position is lower by half the depth of the eleventh vertebra than the level assumed with the body in the supine position. The bullet shadow also approaches the mid-line in the erect position. The effect of forced inspiration causes the apex of the bullet to point somewhat downwards in the erect position while it is practically horizontal in the supine position. The alteration of outline of the left hand border of the cardiac shadow and its distance from the nipple line roughly coincide with these changes in the position of the bullet shadow in the erect and supine positions.

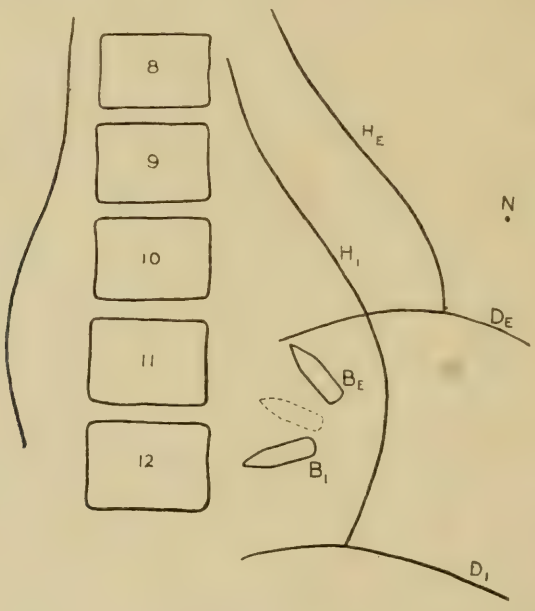


Fig. 1.—Erect.

The greatest difference in lateral deviation of the bullet shadow is obtained by placing the patient on his right and left side respectively. When lying on the left side the bullet shadow closely approaches the nipple line, whereas when lying on the right side it almost reaches the left border of the spine.

(2) *The Effect of Respiratory Movements on the Bullet Shadow.*—During expiration the motion of the bullet has three components: (*a*) A translation upwards; (*b*) a rotation clockwise, as viewed from the front, in which the excursion of the apex of the bullet is greater than that of the base in each case; (*c*) a lateral motion of translation. This lateral movement is (on expiration) outwards away from the mid-line when the patient is standing or lying on his back or left side (see figs. 1, 2, 3), so that, neglecting any antero-posterior

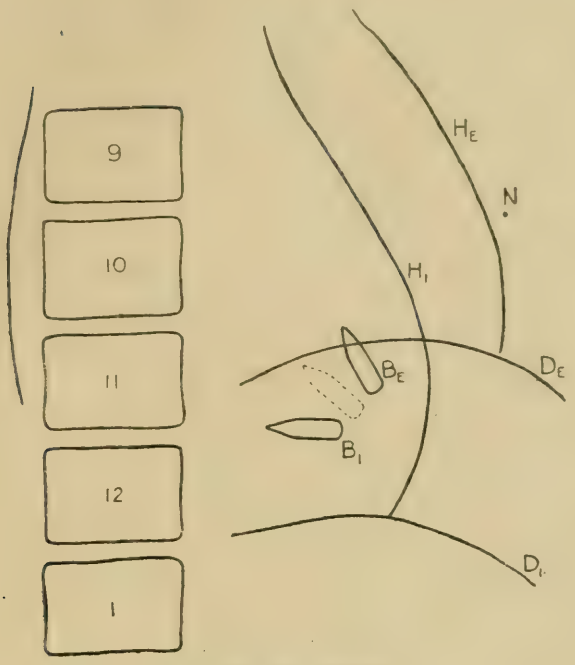


FIG. 2.—SUPINE.

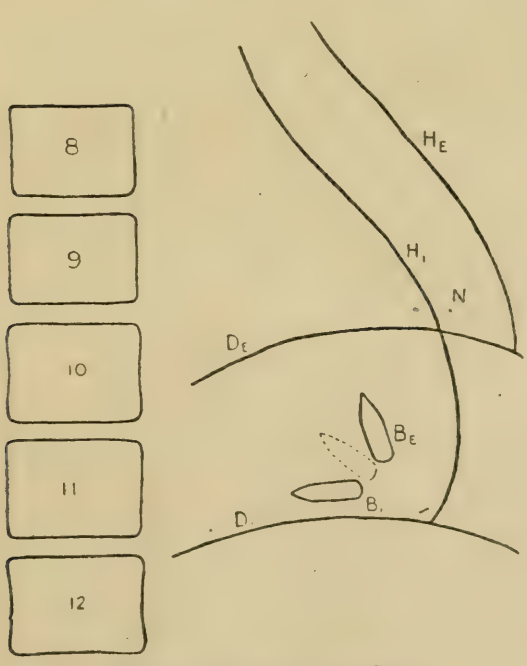


FIG. 3.—LYING ON LEFT SIDE.

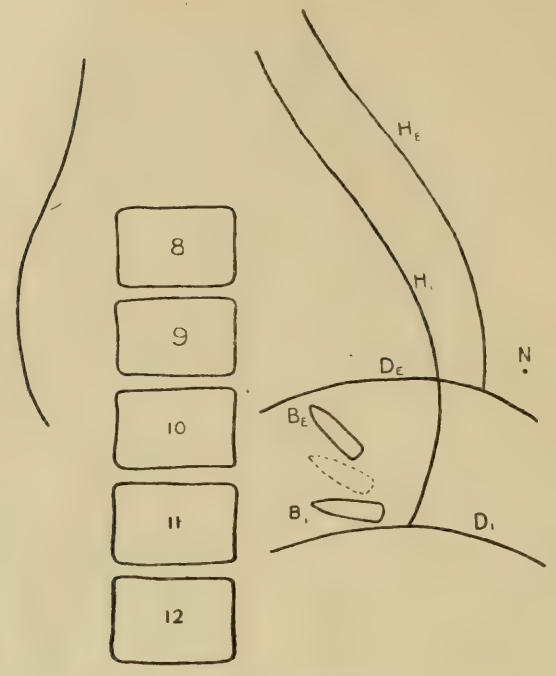


FIG. 4.—PRONE.

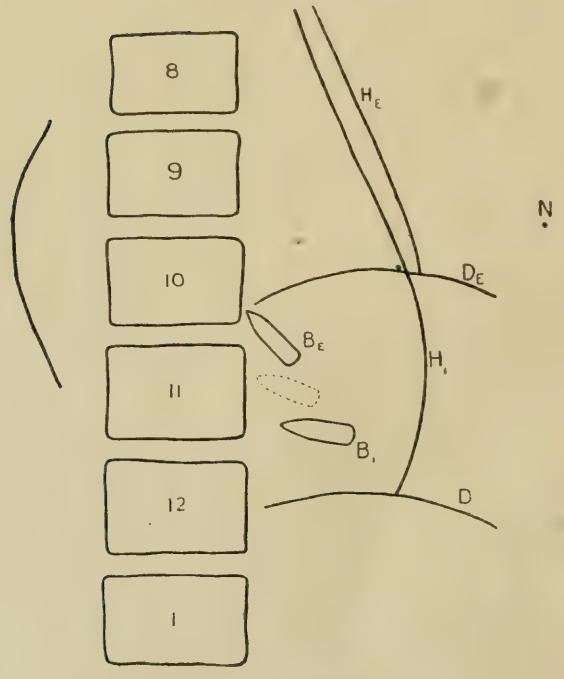


FIG. 5.—LYING ON RIGHT SIDE.

component that may be present the resultant movement is of the same type in these three positions. On the other hand, this lateral movement (also during expiration) is inwards towards the mid-line when the patient is lying on his face

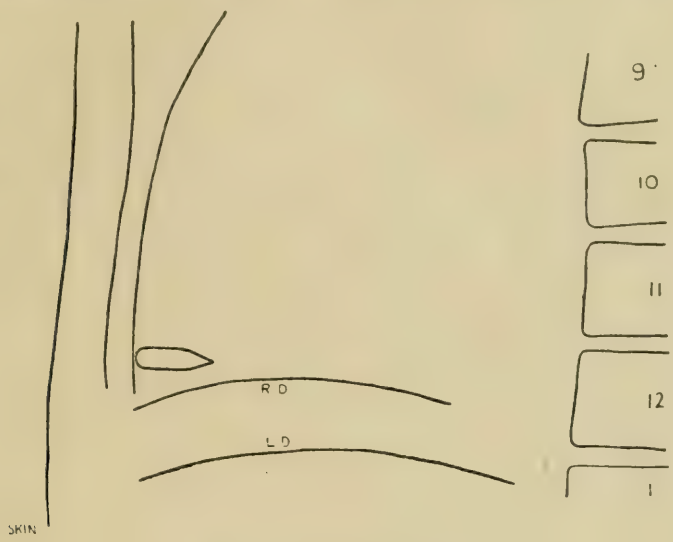


Fig. 6.—Lateral (Supine).

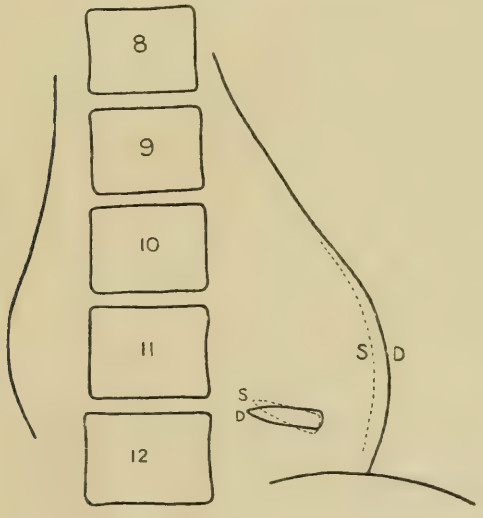


Fig. 7.—Diastolic and Systolic Relationships.

and on his right side (see figs. 4, 5), the excursion is greater in the latter than in the former position. In the prone and right-sided positions the movement of the bullet which accompanies the descent of the diaphragm in deep inspiration may be described as a dive downwards and outwards. The intermediate positions

taken correspond to those assumed by a diver when passing through the water from the vertical, through the horizontal to the reverse vertical position. The base of the bullet represents the head and the apex the feet of the diver. In the erect, supine, and left-sided positions, on the other hand, the bullet movement may be described as a fall into the water with the diver in the horizontal position with a tendency for the feet to travel backwards. An attempt was made to observe the respiratory movements of the bullet with the patient in the inverted recumbent position, both prone and supine. In the inverted supine position the respiratory movements of the bullet are practically the same as in the level supine position (see fig. 2), while in the inverted prone position the movement is much more restricted. In both inverted positions the heart shadow and the crest of the diaphragm assume a higher level.

It will be noticed that the upward movement of the bullet shadow during full expiration is in all positions less than that of the crest of the diaphragm. This is due to the fact that the bullet lies in the portion of the ventricle which occupies the angle between the diaphragm and the wall of the chest and not that portion which rests on the summit of the diaphragmatic dome.

(3) *The Intrinsic Movement of the Bullet during Cardiac Systole and Diastole.* —The continuous lines marked D in fig. 7, are copied from an X-ray photograph. They represent the relative positions of the left border of the heart and the bullet during moderately deep inspiration in the erect position. They approximate to the positions marked H1 and B1 in fig. 1. The position of the left hand border of the heart and the bullet at the instant of cardiac systole are shown by the broken lines S. It will be seen that the excursion of the point is greater than that of the base of the bullet and opposite in direction to that of the left border of the heart. Thus the apex of the bullet and the left border of the heart tend to approximate during systole. The movement of the base of the bullet is very small and as far as can be observed is opposite in direction to that of the apex. It is probable that the diastolic and systolic relationship in the bullet motion is roughly the same in all positions of the heart as no observational evidence was obtained to the contrary.

Remarks by Colonel C. J. Bond.

The evidence obtained in this case on the whole confirms the earlier observations carried out by the late Sir Victor Horsley and myself on animals at the Brown Institution in 1882, and by myself on the human subject by means of an air bag introduced into the œsophagus connected up with a tambour and recording drum. By this means records were obtained of the base beat of the heart and of the effect of variations in bodily position on the position of the heart and on intra-auricular pressure. These observations were published in the *British Medical Journal* on December 12, 1885. The evidence in the present case shows that the heart sits upon and by its under surface moulds itself to the convex dome of the diaphragm, at any rate during the uncontracted diastolic phase. It also occupies the angle between the thoracic wall and the rising diaphragm. The bullet lies apparently in that portion of the ventricle which occupies this angle. The chief movements of the heart in the chest brought about by changes in bodily position are lateral side to side movements and up and down alteration in level movements. Direct observation of the bullet shadow on the screen reveals

the great amplitude of these lateral movements when the patient turns from his right to his left side. The upward and downward movements are more complicated and differ in different bodily positions and in alternating phases of respiration.

Thus in the erect, the sloping supine, and the left sided positions, in all of which the heart moves freely, the effect of the descent of the diaphragm in inspiration is to cause the apex of the heart to fall, and while falling to pass a little inwards towards the mid-line. The heart assumes a more vertical position in the chest. Whereas in the right sided position, and partly in the lying prone position, the heart apex falls on inspiration, but it also passes somewhat outwards towards the nipple line. The heart lies more horizontally than in the other positions. In seeking for some explanation of this change in direction of heart movement during respiration according to bodily position we find that in forced expiration the bullet shadow passes through the same phases of movement in the reverse order. We know that with the patient in the right sided position the heart tends to recede from the chest wall in the nipple line and to fall back on its base on the spine. In these figures a larger area of cardiac shadow appears to the right of the spine and at the same time the extension of the left border of the heart on deep expiration is much less in the right sided than in the left sided or the erect positions (compare fig, 5, H*e* and H*i* with fig. 3, H*e* and H*i*). The same thing occurs to a less degree with the patient lying on his stomach, this is probably due to the pressure of the abdominal viscera on the diaphragm.

What happens then in forced expiration during the rise of the diaphragm and the falling in of the chest wall is this :—

In all bodily positions the portion of the heart which lies on the diaphragm is raised, but while in the erect, the sloping supine, and the left-sided positions this elevation is accompanied with a spreading outwards to the left, in the right-sided position the heart falls backwards and to the right on its own base, and when the diaphragm rises in forced expiration the portion of the heart resting on the diaphragm and the apex, which in this patient contains the bullet not only rises but passes inwards towards the spine.

The physiological and pathological effects on the function of the heart brought about by changes in bodily position both in man and animals were described in the paper previously published (see *British Medical Journal*, December 12, 1885).

A series of electro-cardiograms was taken but no change referable to the presence of the bullet was observed.

I wish to record my thanks to Sir James Mackenzie for his kind advice in this case, and especially to Mr. Jevons for the skill and care with which he has traced and recorded the cardiac movements.

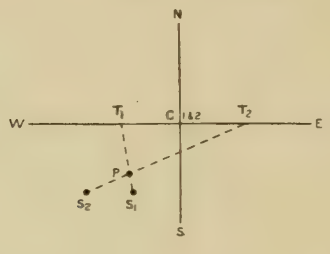
A SIMPLE METHOD OF X-RAY LOCALIZATION.

By Captain D. B. McGRIGOR.
Royal Army Medical Corps.

The following is a simple and rapid method of carrying out a complete localization without the use of any expensive apparatus.

First, make the two ordinary exposures necessary for the Mackenzie Davidson method, accurately centring your tube over the cross wires and moving the

Fig. 1.



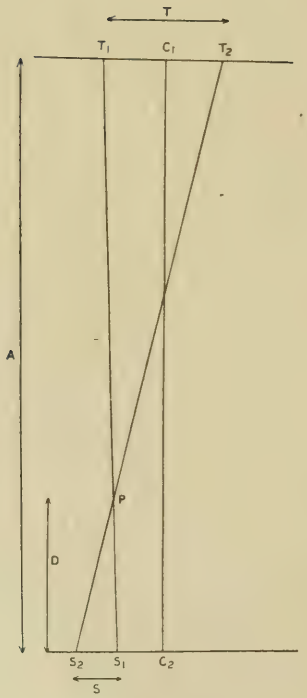


Fig. 2.

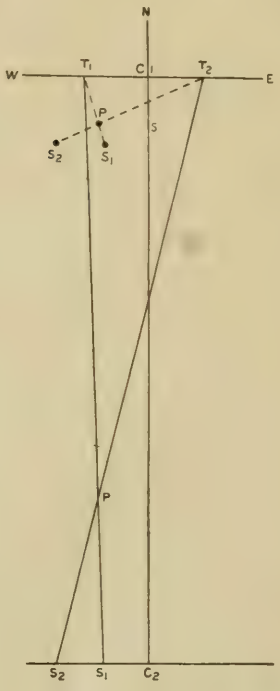


Fig. 3.

tube the usual three centimetres to each side. Both exposures can be taken on one plate, as this not only saves time and plates, but also does away with the necessity for using a plate changing box. After developing, copy the cross

line markings which are on the plate and also on the patient's skin on a sheet of paper, as in fig. 1, along with the position of the two shadows S1 and S2.

Mark the position of the tube before and after movement T1 and T2. Join T1 and S1 and T2 and S2, the lines intersecting at P. Obviously this is just a plan view of the Mackenzie Davidson localizer, with the advantage that the point P indicating the position of the foreign body is mathematically transferred to the plane of the negative instead of being worked out mechanically.

Second, all that is now required, besides marking point P on the patient's skin, is to find the depth of the foreign body. This can be done either by means of the well known formula $\frac{A \times S}{T + S} = D$ = depth, A being the distance of the tube to the plate, T the movement of the tube, and S the movement of the shadow; or by a simple drawing on the paper which is practically the same as the method mentioned by Dr. Hampson in the *Archives of the Röntgen Ray* for November, 1914, pp. 203. This time, as the drawing (fig. 2) is obviously an elevation view of the localizer, mark the position of the two shadows S1 and S2 on the plate level C2, C1, C2 being the distance that you are working at between the tube and the plate. Again join T1 and S1, and T2 and S2, which intersect at P the elevation position of the foreign body. Now the depth D can been measured at once.

Having found the position (P in fig. 1) and the depth (D in fig. 2) of the foreign body, you have all the information required, absolutely mathematically correct, in contrast to the mechanical errors which may creep in when working with cross threads and planes.

Figs. 1 and 2 can be combined to save time as in fig. 3.

The use of N., E., S., W., for skin markings prevents any mistake occurring such as marking the wrong quadrant on the patient's skin.

A CASE OF SUPPURATIVE MENINGITIS WITH GLYCOSURIA, SIMULATING DIABETIC COMA.

By FRANK E. TAYLOR, M.D., B.S., M.R.C.P.Lond., F.R.C.S.Eng., D.P.H.Camb.
Pathologist and Bacteriologist to the Queen Alexandra Military Hospital; Lecturer on Bacteriology, University of London, King's College.

AND

Captain W. H. McKINSTRY.
Royal Army Medical Corps.

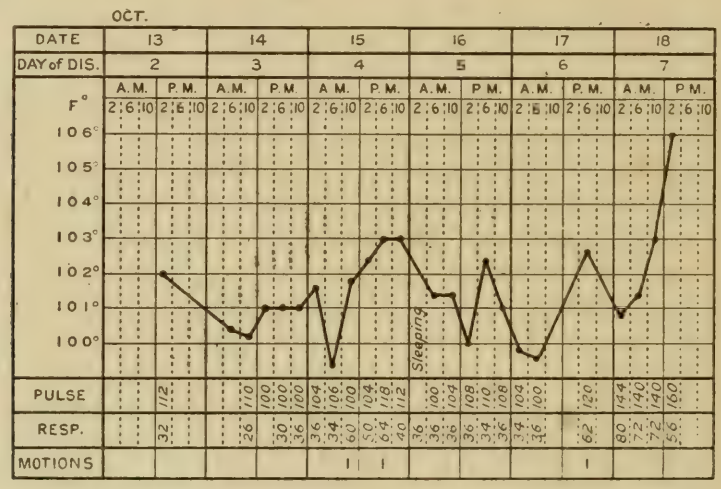
On October 13, 1916, the following case was admitted into the Queen Alexandra Military Hospital, and was thought worthy of being placed on record on account of several interesting points to be discussed later:—

Second Air Mechanic E., of the R.F.C., aged 36, with four months' service had been ill for twenty-four hours, complaining of severe pain in the right side of the chest, cough, and difficulty of breathing.

Condition on Admission.—The patient appeared ill, with flushed face and marked dyspnœa. The temperature was 102° F., the pulse-rate was 112 and the respirations 38 per minute. Examination of the chest revealed diminished

expansion of the right lower chest, withst ony dullness and absence of tactile vocal fremitus and breath sounds over the right lower lobe. Typical "rusty" sputum was being expectorated, and the case was diagnosed as one of pleurisy and pneumonia.

Treatment.—Poultices were applied to the chest. Calomel three grains and pulv. ipecac. co. grains x were ordered *statim.* October 15, 1916: Patient has had a bad night. Pain was intense so that patient could not lie comfortably in bed. The temperature still ranged from 101° F. to 103° F. The pulse was of good quality with a pulse-rate of 100. The respirations were very rapid rising to 60 per minute. The physical signs in the chest remained the same, no signs of fluid being present. There was no cyanosis. The heart and pericardium were normal. The application of leeches to the right side of the chest caused great relief of the pain almost immediately and a stimulant expectorant mixture was prescribed.



Temperature chart showing rise of temperature to 107° F. before death.

October 16, 1916: Patient appeared to be greatly improved, said he felt quite well and was very cheerful. The temperature was 102° F., pulse 100 and respirations 36. There was very little cough and no expectoration.

October 17, 1916: The ward sister noticed some twitching of the patient's face; he had previously complained of intense headache. He vomited immediately afterwards and became very collapsed with incontinence of fæces. Coma rapidly supervened, with dilated pupils which did not react to light. Conjugate deviation of the eyes was noted first to the left and then to the right. All the superficial reflexes except the conjunctival were lost. Later he became very restless, constantly picking at his face which wore a perpetual frown. The respirations rose to 64 and presented the appearance of air hunger. The pulse still remained of good quality, being 100 to the minute. He had retention of urine and a catheter was passed drawing off twenty ounces of urine. On examination this contained a trace of albumin and a few hyaline and granular casts, as well as a large amount of sugar (not estimated quantitatively) but acetone and

diacetic acid could not be detected. No distinctive odour of his breath could be recognized by any of several observers who examined him with this in view. Further, no history suggestive of glycosuria—excessive thirst, wasting or polyuria—could be elicited on cross-examination of his wife; his health before this attack seemed to have been very good. An attempt made to administer alkalies subcutaneously was unsuccessful on account of the patient's restlessness, and rectal salines met with no better results. He could not take anything by the mouth. The patient's condition remained much the same during the night.

October 18, 1916: The respirations were now 80 and the pulse 144, and inclined to be irregular. His colour had much improved. The pupils were no longer dilated. He appeared to be temporarily paralysed on the left side, and had conjugate deviation of the eyes to the left. Incontinence of urine now developed, but a sample of urine was collected and found to be quite free from sugar, whilst the quantity of urea present was normal. Venesection was performed, twenty ounces of blood being removed and two pints of normal saline containing one per cent sodæ bicarb. were injected into the vein. Later the eyes became deviated to the right, the pulse got weaker, Cheyne-Stokes respiration developed, he became cyanosed, spasms of the jaw and muscles of both arms were noted, and the patient died at 3 p.m. Just before death the temperature rose to 107° F. A copy of the temperature chart is appended.

Post-mortem Examination.

The post-mortem examination was made thirty-six hours after death. The body was well-nourished and showed no signs of external injury except a hæmatoma about the size of the palm of the hand between the umbilicus and left anterior superior spine of ilium.

Thorax.—The whole of the pleura covering the right lung was covered with a layer of semi-membranous purulent exudation about a quarter of an inch thick, which could easily be peeled off. The left lung and pleura appeared healthy. There was no free fluid in the pleural cavity.

The heart appeared normal and there was no pericardial effusion. The vessels about the base of the heart and the structures in the mediastinum were normal.

Abdomen.—All the organs, including the kidneys and liver and pancreas, appeared healthy.

Brain.—On removing the outer coverings of the brain, pus was found mapping out the sulci on the anterior, superior, posterior lateral and internal surfaces, and also the course of the blood-vessels. When the brain was removed the base was found free from pus except for a small area on each side where the middle meningeal artery takes its origin. The upper surface of the cerebellum was thickly covered with pus, particularly in the region adjoining the mid-cerebrum. The other surfaces of the cerebellum were free from pus. No pus could be found about the medulla. The brain when cut into showed no sign of abscess or excess of fluid in the ventricles.

Smears taken direct from the pus in the sulci, stained by Gram's method, showed long chains of streptococci as well as staphylococci. Streptococci were also found in smears from the cerebrospinal fluid and in the blood drawn direct from the seared heart.

Media of agar broth and trypsin broth, legumin agar inoculated from the

blood and the pus from the brain and pleura, incubated at 37° for twenty-four hours and examined, showed growths of streptococci, *Staphylococci aureus*, and a large Gram-positive sporing organism, the last being no doubt due to post-mortem invasion of the tissues.

Although the nature of this case as one of suppurative meningitis with transient glycosuria was plainly revealed by the post-mortem examination, the recognition of the cause of the sudden coma formed a difficult and perplexing problem during life. It was in the attempt to settle this question that the urine was sent for examination, and when it was found that it contained a large quantity of sugar, the diagnosis of diabetic coma was raised. The absence of polyuria and of acetone and diacetic acid in the urine, as well as the absence of the characteristic sweetish acetone-like odour of the breath, rendered this diagnosis a very questionable one.

The question of uræmic coma was next raised, seeing that albumin, though in small amount, as well as a few hyaline and granular casts were found in the urine. The determination of the percentage of urea was then suggested, and for this purpose a further specimen of urine was obtained on the following day. The percentage of urea was found to be normal (i.e., two per cent), and this fact was taken as disposing of the diagnosis of uræmic coma.

A quantitative determination of the sugar was then decided upon, but in this specimen no trace of sugar or other Fehling reducing substance could be obtained, showing that the glycosuria was only a transient condition.

Lastly, the terminal hyperpyrexia, the temperature rising just before death to 107° F. which occurs not uncommonly in infective conditions, is an interesting point to note.

As regards the relationship between diabetic coma and the presence of the acetone-bodies in the urine, Cammidge [1] states, that "all cases of diabetes are not complicated by acetonæmia, although it is a constantly present menace, since a deficiency in the oxidative processes of the body is an essential element of the condition. It is only when this reaches a certain stage that the acetone bodies appear in the urine *as a necessary consequence.*"

Further, he states that acetone and aceto-acetic acid, though usually present in the urine when the coma supervenes, are not as abundant as before, but that the amount of beta-oxybutyric acid is generally much increased.

The completed history of the case, with its transient glycosuria, indicates the neurogenous origin of the glycosuria. Regarding this condition, Cammidge [2] states, that "such a transitory glycosuria, apparently of central origin, has been noticed in connexion with lesions of both the central and peripheral nervous system, such as tumours and hæmorrhages at the base of the brain, lesions of the floor of the fourth ventricle, *cerebral and spinal meningitis*. Concussion of the brain, fracture of the cervical vertebræ, tetanus and sciatica. It has also been met with after epileptic, hystero-epileptic and apoplectic seizures, in traumatic neuroses, such as those following railway accidents, mental shocks, mental strain, worry, fatigue and great anxiety."

The practical lesson which this case enforces is the danger of concluding that the presence of sugar in the urine of a comatose individual is necessarily due to diabetic coma. Further investigations and a critical survey of the history of the case are essential for the accurate elucidation of the cause of this condition.

We have to thank Captain H. S. Morton, R.A.M.C., for the clinical history of this case, and Surgeon-General J. Dallas Edge, C.B., A.M.S., commanding the Queen Alexandra Military Hospital, for permission to publish it.

REFERENCES.

[1] Cammidge, P. J. "Glycosuria and Allied Conditions," Lond.: Ed. Arnold, 1913, p. 214.
[2] *Loc. cit.*, p. 169.

SUSCEPTIBILITY TO CEREBROSPINAL MENINGITIS IN RELATION TO AGE.

By Captain ARTHUR COMPTON.
Royal Army Medical Corps.

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In continuation of our studies into the etiology of cerebrospinal fever, we have been led to investigate the most susceptible age for the appearance of the disease. Theoretically, as will be seen presently, the question is of considerable interest in its bearing on etiology. Practically, it is also of importance in view of the fact that many diseases are to-day recognized as showing age incidence; the latter often playing a prominent part for the clinician in the differential diagnosis of numerous conditions.

For the purpose of the present study we have taken data, collected by ourselves, arising out of the epidemics of 1914-16 and of 1915-16, in the Dorset Military District.

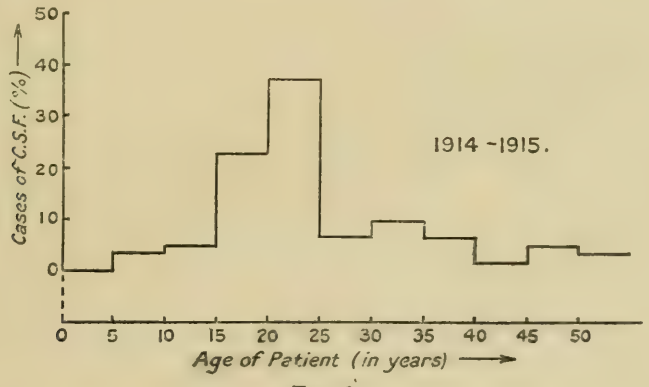

Fig. 1.

With regard to the epidemic of 1914-15, of thirty-one cases (civil and military) of the disease, about whom accurate information as to their ages is available :—

3·22	per cent	occurred	in	persons	from	5	to 10	years of age
4·84	,,	,,	,,	,,	,,	10	,, 15	,, ,,
22·58	,,	,,	,,	,,	,,	15	,, 20	,, ,,
37·10	,,	,,	,,	,,	,,	20	,, 25	,, ,,
6·45	,,	,,	,,	,,	,,	25	,, 30	,, ,,
9·68	,,	,,	,,	,,	,,	30	,, 35	,, ,,
6·45	,,	,,	,,	,,	,,	35	,, 40	,, ,,
1·61	,,	,,	,,	,,	,,	40	,, 45	,, ,,
4·84	,,	,,	,,	,,	,,	45	,, 50	,, ,,
3·23	,,	,,	,,	,,	over	50		,, ,,

On plotting the percentage of cases as ordinates, and the corresponding age-periods as abscissæ, these numbers give the graphical representation of fig. 1.

This figure shows that for the epidemic of 1914-15, so far as the Dorset District is concerned, the *apparent* most susceptible age is between 20 and 25.

In regard to the epidemic of 1915-16, of sixty-two cases (civil and military) occurring in the district from the beginning of July, 1915, to the end of June, 1916, their distribution in terms of age is as follows :—

1·61	per cent	occurred	in	persons	under	..	5	years of age
1·61	,,	,,	,,		from 5	to	10	,, ,,
0	,,	,,	,,		,, 10	,,	15	,, ,,
28·22	,,	,,	,,		,, 15	,,	20	,, ,,
43·55	,,	,,	,,		,, 20	,,	25	,, ,,
13·71	,,	,,	,,		,, 25	,,	30	,, ,,
4·03	,,	,,	,,		,, 30	,,	35	,, ,,
2·42	,,	,,	,,		,, 35	,,	40	,, ,,
3·22	,,	,,	,,		,, 40	,,	45	,, ,,
1·61	,,	,,	,,		,, 45	,,	50	,, ,,
0	,,	,,	,,		over	..	50	,, ,,

On graphical representation these numbers give the curve of fig. 2.

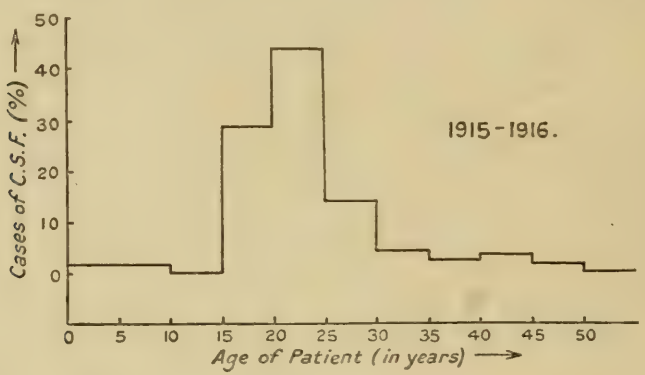

Fig. 2.

This figure shows that the *apparent* most susceptible age is between 20 and 25, in which age-period nearly fifty per cent of the cases occurred. In this particular the finding for 1915-16 confirms that of 1914-15; indeed, the parallelism between the two curves is very striking.

This age, it will be noticed in passing, corresponds to the military age.

In order to get the *real* most susceptible age, and at the same time to generalize the above finding, the percentage number of cases for each age-period requires to be referred to the percentage number of people of that age-period living in the district at the time. To get a rough approximation to the latter, I have taken the combined statistics of the contacts, 914 in number, of the thirty-one cases (1914-15); and the contacts, 2,109 in number, of the sixty-two cases (1915-16)—dealt with by the Laboratory[1]—and arranged them in terms of age-periods. Table I sets out the result :—

[1] Associated as Laboratory Staff with me in connexion with these contact examinations, have been : Acting Serjt. J. W. J. Leighton, B.Sc.(Lond.), R.A.M.C.(T.) ; Cpl. H. L. Smith, R.A.M.C.(T.) ; Ptes. G. Blunt, T. Dakin and E. Wigg, of the Royal Army Medical Corps.

TABLE I.

Age-period	Number of contacts	Percentage age distribution
Under 5	6 ..	.. 0·20
5 to 10	13 ..	.. 0·43
10 ,, 15	17 ..	.. 0·56
15 ,, 20	614 ..	.. 20·31
20 ,, 25	982 ..	.. 32·48
25 ,, 30	554 ..	.. 18·33
30 ,, 35	325 ..	.. 10·75
35 ,, 40	233 ..	.. 7·71
40 ,, 45	141 ..	.. 4·66
45 ,, 50	85 ..	.. 2·31
Over 50	53 ..	.. 1·75

Now if we arrange the ninety-three cases of the disease to which the above numbers appertain in corresponding age-periods, and refer the percentage number of cases in each age-period to the percentage age distribution of that period we get Table II :—

TABLE II.

Age period	Total number of cases in the district during 1914-15 and 1915-16.	Percentage cases	Percentage cases / Percentage age distribution	
Under 5 ..	0 + 1 = 1 ..	1·08	$\frac{1\,08}{0\cdot20}$	5·40
5 to 10 ..	1 + 1 = 2 ..	2·15	$\frac{2\cdot15}{0\cdot43}$	5·00
10 ,, 15 ..	1·5 + 0 = 1·5 ..	1·61	$\frac{1\cdot61}{0\cdot56}$	2·87
15 ,, 20 ..	7 + 17·5 = 24·5 ..	26·34	$\frac{26\cdot34}{20\cdot31}$	1·30
20 ,, 25 ..	11·5 + 27 = 38·5 ..	41·40	$\frac{41\cdot40}{32\,48}$	1·27
25 ,, 30 ..	2 + 8·5 = 10·5 ..	11·29	$\frac{11\cdot29}{18\cdot33}$	0·61
30 ,, 35 ..	3 + 2·5 = 5·5 ..	5·91	$\frac{5\cdot91}{10\cdot75}$	0·55
35 ,, 40 ..	2 + 1·5 = 3·5 ..	3·76	$\frac{3\cdot76}{7\cdot71}$	0·49
40 ,, 45 ..	0·5 + 2 = 2·5 ..	2·69	$\frac{2\cdot69}{4\cdot66}$	0·58
45 ,, 50 ..	1·5 + 1 = 2·5 ..	2·69	$\frac{2\cdot69}{2\cdot81}$	0·95
Over 50 ..	$\frac{1}{31} + \frac{0}{62} = \frac{1}{93}$ ..	$\frac{1\cdot08}{100\cdot0}$	$\frac{1\cdot08}{1\cdot75}$	0·61

On plotting the ratios of column 4, above table, as ordinates and the corresponding age-periods as abscissæ, we get the curve of fig. 3.

In reckoning the number of individuals occurring in a given age-period those appertaining to the ages which limit the period are counted both ways ; e.g., if there were fifteen cases of 20 years of age, 7·5 would be referred to the period 15—20, and 7·5 to the period 20—25. This is the explanation of the decimals in column 2.

A glance at this figure suffices to see that for the present epidemic the *real* most susceptible age is under 5 years, that is, during infancy and early childhood; while there is a marked falling off of cases after adolescence is passed and adult life is reached—indeed, the least susceptible age would appear to be between 35 and 40.

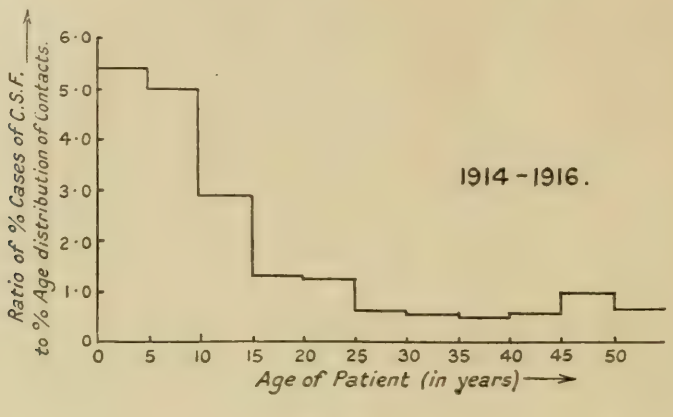

FIG. 3.

It is interesting to note that this result establishes the percentage of the present epidemic with that of former epidemics in this and other countries: children, in other epidemics, according to most observers, having been noted to be most susceptible to the disease.

But, in addition, the result is of interest from the point of view of etiology. My studies in connexion with the disease in the Dorset district during 1914-15 led me to formulate the hypothesis that cerebrospinal meningitis is a weather disease, outbreaks being associated with sudden saturation of the atmosphere by water-vapour, combined with equable conditions of temperature—the meningococcus being about.[1] This hypothesis has been further developed and confirmed by my studies of 1915-16.[2] On this theory the increased facility with which, in the case of the child "carrier," the meningococcus traverses the naso-pharyngeal mucous membrane barrier to enter the system and invade the meninges, can easily be explained by the greater fragility and delicacy of the naso-pharyngeal *mucosa* of the child.

[1] Report to the War Office, Medical Research Committee, of August 2, 1915 (JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, November, 1915, pp. 546-570; the *Lancet*, 190, 1916, p. 255).

[2] Report to the War Office, of October 16, 1916. (Not yet published.)

Report.

AN INVESTIGATION INTO THE INCIDENCE OF ALBUMINURIA AND CASTS IN BRITISH SOLDIERS DURING TRAINING AND THE RELATIONSHIP OF THIS CONDITION TO WAR NEPHRITIS

By Captain H. MacLEAN.
Royal Army Medical Corps.

Report to the Committee on War Nephritis.

(The Medical Research Committee provided the services of Captain H. MacLean.)

CONTENTS.

(1) Introduction.
(2) Incidence of Albuminuria in 50,000 Men examined at the Base.
(3) Presence of Casts in Albuminous Urines.
(4) The Effect of Sudden Severe Exertion in the Production of Temporary Albuminuria.
(5) Incidence of Albuminuria and of Casts in Men of Different Occupations.
(6) Relation of Length of Service to Incidence of Albuminuria and of Casts.
(7) Relation of Age to Incidence of Albuminuria and of Casts.
(8) Results of Investigation on Recruits at Aldershot.
(9) Summary of Results of Investigation.

(1) Introduction.

The question of the incidence and significance of albuminuria in the soldier has up to the present received very little attention. A few attempts[1] in this direction have been made, but in each case the number of men examined has been too small to warrant any general application of the results obtained. Further, it does not seem that any attempt was made in these investigations to ensure the collection of specimens under suitable or comparable conditions. As will be shown later, the incidence of albuminuria in a group of soldiers is often increased by as much as 100 per cent or more as the result of a few hours' active exercise, so that a series of examples taken from the same men in the morning and at night would show very marked differences. In any investigation of this kind it is necessary, in order to ensure reliable results, to take the specimens in the morning, as in this case the results are comparable and represent the *minimum incidence* of albuminuria in any group of men at a given time.

The various results obtained in the present investigation are summarized in the following pages. Such an investigation as that here recorded has never before been carried out on anything approaching the present scale, and so great is the wealth of data collected that it is quite impossible to do justice to it at the present time. Only the essential points having a direct practical bearing are recorded here, but it is hoped that the great collection of facts which have been accumulated may, in the future, form a subject for the labours of the professional statistician.

In all, 60,000 men were examined. Of these, the first 50,000 were men who

[1] As the present paper was written under circumstances in which it was impossible to consult the literature, no references are given.

had finished their course in England and had come to the base at Etaples for a short period—generally nine or ten days—to complete their training before going to the front. Some of these, of course, had been in the line before, and were returning after being wounded or sick, but these constituted only an insignificant proportion of the total.

The exact period of training which the different individuals had undergone varied greatly, and is set out in tabular form later on; other particulars, such as age, are also furnished.

The last 10,000 men were examined at Aldershot, and chiefly represented recruits who had undergone little or no training.

General Procedure in Collection and Examination of Urine.

For the reason already stated, morning urine alone was examined. In general, the first specimen passed after getting up in the morning was obtained. The difficulties encountered in the various phases of this investigation were often very great; the large scale on which operations were carried out made it exceedingly difficult to get a sufficient number of specimens per day without interfering with the arrangements made for the training of the men. Again, the local conditions for such an examination were by no means ideal, as both materials and laboratory accommodation were of the most primitive kind.

After several unsuccessful attempts, the following routine method for the collection of specimens was adopted; it worked excellently, and was capable of being partly carried out by hospital orderlies.

The urines were collected in properly cleaned "Ideal" milk tins. On the evening previous to the collection of specimens an orderly arranged with the N.C.O.s in charge of the selected group to have the men paraded at an early hour in the morning. The men were asked not to pass water, if possible, until the parade took place. On the same evening each man received a slip which he filled up with certain particulars. At first these slips had to be typed, but later on some printed ones were obtained, a specimen of which is attached here.

Regt. No.	NAME AND RANK	Age	Regiment and Battalion Number	Total Period of Service in Army	Civil Occupation	If ever had			Other Illness
						Scarlet Fever	Gonorrhœa	Syphilis	

For the last 10,000 men examined in France some additional details, such as the length of service abroad, were also obtained.

When the slips were handed round to the men, the N.C.O.s in charge took steps to ascertain that they were properly filled up. On the following morning the men paraded, and each man, on handing up his slip to an orderly, received a numbered tin into which he passed urine. The orderly who gave out the tin marked on the slip the number of the tin which the man had just received. In

this way any particular specimen of urine could be identified, and the collection of 300 specimens only took about fifteen minutes, and did not in any way interfere with the men's programme of training. In general, two groups of 300 men were done each day.

After the parade was over, the orderlies, who had been trained to carry out a preliminary examination of the urine, collected the positive specimens and brought them to the laboratory, where they were further examined. As the orderlies had been specially trained to accept as positive every urine that gave the faintest possible reaction with the test employed, it was generally found that only about fifty per cent of the urines brought back actually contained albumin. This, however, ensured that no positive specimen was missed.

In the laboratory the positive specimens were graded according to the amount of protein present; they were then centrifuged and examined for casts.

Tests used for Protein and Methods of Grading Urines according to Amount of Albumin.

The testing reagent used in this investigation was salicyl-sulphonic acid. Of all the protein tests, this is undoubtedly one of the most reliable and delicate; it is so easily applied that any intelligent orderly can be taught to use it in a very short time, and it gives very accurate results. In the rough preliminary testing, six drops or more of a saturated solution of salicyl-sulphonic acid in distilled water were added to about half an inch of urine in an ordinary test-tube. In urines containing a considerable amount of protein a dense white precipitate was at once formed, but any urine giving the faintest opalescence with the reagent was provisionally taken as positive.

In the laboratory the positive specimens were further examined by means of salicyl-sulphonic acid, and, in cases in which any doubt arose, by heat coagulation and by cold nitric acid as well. A rough estimate of the amount of protein present was made, based on the amount of precipitate obtained with salicyl-sulphonic acid. For convenience in tabulating results, six different grades of albuminuria were recorded as A, B, C, D, N, NN; these letters refer roughly to the quantities of albumin indicated in the table.

Table I.

Grade	Rough general description of precipitate as given by salicyl-sulphonic acid	Rough quantitative estimation of amount of protein present
A	Very marked	200 to 300 mg. or more per 100 c.c.
B	Marked	80 to 200 mg. per 100 c.c.
C	Fairly well marked	20 to 80 mg. per 100 c.c.
D	Very distinct	5 mg. or less to 20 mg. per 100 c.c.
N	Faint	—
NN	Faint trace	—

As no exact quantitative estimations were possible, it is obvious that the above grades of albuminuria are only rough general indications of the amount of protein present. In urines marked A, B, and C, the protein reaction was always well marked, and in D it was always quite distinct, so that a definite positive result

was obtained by the ordinary tests (heat coagulation and cold nitric acid tests) as well as by salicyl-sulphonic acid. Urines of grade N sometimes gave the heat coagulation test directly, but more often after the addition of salt and of a trace of acid in some cases. In grade NN no definite results were generally obtained either on boiling or by the cold nitric acid test, though salicyl-sulphonic acid gave a definite slight opalescence. It is, of course, possible that not all the urines in the lower grades contained true protein; they are indicated here merely as giving results with salicyl-sulphonic acid.

In short, any urine of grades A, B, C, D contained sufficient protein to give a definite well-marked reaction with any of the ordinary protein tests, while grades N and NN did not generally do so unless very carefully examined, and even then, in NN samples, negative results were the rule.

Albuminuria and War Nephritis.

The question of the possible relationship of albuminuria to war nephritis was only one of the many points on which it was hoped to obtain definite information. Various other problems, such as the effect of training, the part played by previous disease, the influence of age, and other factors on albuminuria, were investigated.

If war nephritis as seen on active service were the result of conditions prevailing during training, it was hoped that reliable information on these points would be forthcoming.

War nephritis as commonly seen occurs chiefly in men in the fighting area; though isolated cases have been reported as occurring at the base, and even in England, there is little doubt that the majority of cases are found at the Front. It was not improbable, as held by several authorities interested in the subject, that the acute nephritis seen in the Army was the culminating stage of a pathological process induced by such factors as severe and long-continued exertion or other conditions inseparable from the life of the soldier during training for active service. On this view, it was not unreasonable to assume that some evidence of a gradual deterioration of kidney efficiency might be found in soldiers during training, and an answer to this problem was sought in the results of the investigation described in this paper.

In this investigation over 60,000 men have been examined, and the results emphatically support the view that no definite injury to the kidney is sustained by the soldier as the result of the conditions to which he is necessarily subjected during training.

It is difficult to imagine that the kidneys could be injured by training or other factors without some evidence of this being obtained by examination of the urine. If the conditions under which the soldier is prepared for active service were detrimental to the kidney in any appreciable degree, it is almost certain that some evidence of this would be found, at any rate, during the later stages of training, and that the longer the man was in training, the more marked the evidence would be.

The results obtained all point in the same direction, and unequivocally suggest that the kidney efficiency, as indicated by the ordinary examination for albumin and casts in the urine, is not diminished in any way.

This being so, it is difficult to believe that conditions outside the actual area of active operations can play any appreciable part in the etiology of war nephritis.

In order, however, to ascertain whether the men who suffered from albuminuria at the base were ultimately more liable to attacks of war nephritis after they had gone to the Front, a record of the men examined was kept and filed in a card-index system. Arrangements were also made to have the returns of nephritis from the various hospitals in France compared with this record. In this way any relationship existing between present albuminuria and future acute nephritis could be established.

The returns, so far, have been too few for definite statements; but, as was to be expected, several men who, on examination at the base, gave no indication of albuminuria have subsequently returned suffering from acute nephritis. On the other hand, a certain number of those suffering from albuminuria have also returned with acute nephritis. It is hoped that a sufficient number of records of returned nephritis cases already examined for albumin will be forthcoming within the next few months to form the subject of a special communication.

Meanwhile, the results of the present investigation strongly support the view that the albuminuria of soldiers in active training at the base is not increased by the conditions associated with this training, and was probably present to an equal extent in civil life.

(2) Incidence of Albuminuria in 50,000 Men examined at the Base.

All the men examined were, of course, marked "Active Service," and at the period of examination were undergoing a fairly strenuous course of training. The investigation took place during the summer months; it began about the end of May, and was completed about the beginning of October, 1917.

In certain cases of albuminuria the presence of spermatozoa or pus in the urine indicated at once the probable cause, but it is important to note that in several cases definite epithelial, as well as hyaline, casts were present. It is generally stated that when spermatozoa are found in the urine, certain bodies closely resembling hyaline casts are also met with. As these bodies do not come from the kidneys, they are of no significance, but it is often very difficult to distinguish between such bodies and the delicate clearer variety of hyaline cast. When epithelial casts are present, however, there can never be any doubt as to their origin. In order to make all allowances for complications of this kind, the total number of men suffering from albuminuria of all varieties was ascertained, and the cases showing any possible cause for the presence of the albumin were noted. The examination of the morning specimens of urine certainly suffers from the disadvantage that spermatozoa are fairly common, but as these bodies are easily found on examination with the microscope, the condition does not give rise to any great difficulty.

The men were examined in groups of 10,000; the various results are recorded in the following tables (II to VII), in which the intensity of the albuminuria is also indicated. It will be seen that the comparable figures obtained in the different groups agree remarkably well on the whole.

Roughly speaking, the total percentage of albuminuria unaccounted for by any of the conditions already mentioned (pus, spermatozoa, blood, etc.) was found to be about 5 per cent; of this, only about 2 per cent represented gross albuminuria of the A, B, C, D grades, while the other 3 per cent was of the less marked variety.

The actual figures in the 50,000 men were as follows:—

Total number with albuminuria = 6·48 per cent.

Number with albuminuria after allowing for pus, spermatozoa, etc. = 5·62 per cent.

Number with gross albuminuria (A, B, C, D grades) = 2·55 per cent.

Number with gross albuminuria after allowing for pus, etc. = 2·29 per cent.

Exact details will be found on reference to the tables in which the distribution of albuminuria in the various groups is given.

TABLE II.—Showing Incidence of Albuminuria in each of the Five Groups of 10,000 Men Examined.

Groups of 10,000 men	Percentage of total number with albuminuria	Percentage with albuminuria after allowing for pus, etc.	Percentage with gross albuminuria (A, B, C, D grades)	Percentage with gross albuminuria after allowing for pus, etc.	Percentage with slight albuminuria (N and NN grades)	Percentage with slight albuminuria after allowing for pus, etc.
1st group ..	5·88	5·26	1·80	1·63	4·08	3·63
2nd ,, ..	6·53	5·81	1·77	1·53	4·76	4·28
3rd ,, ..	6·95	5·85	3·02	2·50	3·93	2·35
4th ,, ..	6·27	5·05	2·78	2·23	3·49	2·82
5th ,, ..	6·77	6·16	3·40	3·08	3·37	3·08
Average ..	6·48	5 62	2·55	2·19	3·92	3·23

TABLE III.—Total Albuminuria in First Group of 10,000 Soldiers Examined.

Grade of albuminuria	Total number with albumin	Number showing albumin without known cause	Number in which albumin possibly due to pus, etc.	Total percentage with albumin, irrespective of cause	Percentage showing albumin without known cause	Percentage in which albumin possibly accounted for as due to pus, etc.
A	24	24	—	0·24	0·24	—
B	45	37	8	0·45	0·37	0·08
C	36	34	2	0·36	0·34	0·02
D	75	68	7	0·75	0·68	0·07
N	185	163	22	1·85	1·63	0·22
NN	223	200	23	2·23	2·00	0·23
Total	588	526	62	5·88	5·26	0·62

TABLE IV.—Total Albuminuria in Second Group of 10,000 Soldiers Examined.

Grade of albuminuria	Total number with albumin	Number showing albumin without known cause	Number in which albumin possibly due to pus, etc.	Total percentage with albumin, irrespective of cause	Percentage showing albumin without known cause	Percentage in which albumin possibly accounted for as due to pus, etc.
A	8	8	—	0·08	0·08	—
B	29	23	6	0·29	0·23	0·06
C	27	25	2	0·27	0·25	0·02
D	113	97	16	1·13	0·97	0·16
N	192	166	26	1·92	1·66	0·26
NN	284	262	22	2·84	2·62	0·22
Total	653	581	72	6·53	5·81	0·72

TABLE V.—Total Albuminuria in Third Group of 10,000 Soldiers Examined.

Grade of albuminuria	Total number with albumin	Number showing albumin without known cause	Number in which albumin possibly due to pus, etc.	Total percentage with albumin, irrespective of cause	Percentage showing albumin without known cause	Percentage in which albumin possibly accounted for as due to pus, etc.
A	8	8	—	0·08	0·08	—
B	25	24	1	0·25	0·24	0·01
C	36	36	—	0·36	0·36	—
D	233	182	51	2·33	1·82	0·51
N	213	179	34	2·13	1·79	0·34
NN	180	156	24	1·80	1·56	0·24
Total	695	585	110	6·95	5·85	1·10

TABLE VI.—Total Albuminuria in Fourth Group of 10,000 Soldiers Examined.

Grade of albuminuria	Total number with albumin	Number showing albumin without known cause	Number in which albumin possibly due to pus, etc.	Total percentage with albumin, irrespective of cause	Percentage showing albumin without known cause	Percentage in which albumin possibly accounted for as due to pus, etc.
A	2	2	—	0·02	0·02	—
B	27	24	3	0·27	0·24	0·03
C	35	30	5	0·35	0·30	0·05
D	214	167	47	2·14	1·67	0·47
N	193	151	42	1·93	1·51	0·42
NN	156	131	25	1·56	1·31	0·25
Total	627	505	122	6·27	5·05	1·22

TABLE VII.—Total Albuminuria in Fifth Group of 10,000 Soldiers Examined.

Grade of albuminuria	Total number with albumin	Number showing albumin without known cause	Number in which albumin possibly due to pus, etc.	Total percentage with albumin, irrespective of cause	Percentage showing albumin without known cause	Percentage in which albumin possibly accounted for as due to pus, etc.
A	6	4	2	0·06	0·04	0·02
B	27	27	—	0·27	0·27	—
C	52	51	1	0·52	0·51	0·01
D	255	226	29	2·55	2·26	0·29
N	191	171	20	1·91	1·71	0·20
NN	146	137	9	1·46	1·37	0·09
Total	677	616	61	6·77	6·16	0·61

From the large numbers of men examined, the results obtained as indicated above may be taken as a measure of the incidence of albuminuria in the British Army during training.

Our information regarding the incidence of albuminuria among soldiers in the trenches is very scanty, but a few very interesting observations have been recorded by MacLeod, who gives the following results :—

I.

French troops, examined within twenty-four hours after return from the trenches.

Examined	Albuminuria			Percentage with albumin
	Copious	Distinct	Trace	
1,861 men	4	16	10	1·66

II.

British troops, the majority of whom had been in the trenches recently.

Examined	Albuminuria			Percentage with albumin
	Copious	Distinct	Trace	
2,220 men	27	48	30	4·73

III.

British troops, who had been some days in the trenches during the coldest weather of the year. Specimens were collected in the trenches. These men had all been in France for twelve months.

Examined	Albuminuria			Percentage with albumin
	Copious	Distinct	Trace	
311 men	—	4	7	3·53

Unfortunately, the numbers of men examined by MacLeod were much too small to permit of the comparison of his figures with the results obtained in the present investigation. It is very doubtful whether they furnish any evidence as to the real incidence of albuminuria in the trenches. However, if we accept the figures provisionally, the total percentage of British soldiers suffering from albuminuria in the trenches is 4·6.

As MacLeod gives no information as to the methods he made use of in testing for protein, but describes the amounts of protein obtained as "copious," "distinct," and "trace," it may be assumed that his results compare with those indicated in this investigation from "very marked" to "faint," i.e., the amounts referred to as A, B, C, D, N, while the NN grade may be omitted.

From this point of view, MacLeod's figure of 4·6 per cent of albuminuria in the trenches is greater than the corresponding figure (3·75 per cent) in this investigation. On the other hand, MacLeod's figure is somewhat below the total percentage of albuminuria when urines containing only a very faint reaction with salicyl-sulphonic acid are included. For the 50,000 men this works out at 5·62 per cent.

So far as the figures go, they seem to indicate that the incidence of albuminuria in the trenches does not appreciably differ from that found in soldiers during training.

The percentage of men with "distinct" albuminuria in both investigations is very similar—2·55 per cent in this one (varying from 1·80 to 3·40 per cent in the different groups of 10,000), while in that of MacLeod it is 2·2 per cent.

(3) Presence of Casts in Albuminous Urines.

General Procedure.

All the specimens of urine which contained albumin were examined for casts. About 25 cubic centimetres of urine were centrifuged for a few minutes and the deposit examined under the microscope. As the tins containing the urine had generally stood for several hours before the examination for casts could take place, most of the solid constituents present were by this time in the lower layers of the urine or on the bottom of the vessel. The upper layer of urine was therefore poured off as carefully as possible, and when only about thirty cubic centimetres to forty cubic centimetres remained, this was shaken up and twenty-five cubic centimetres used for centrifuging.

In examining the deposit it was found most convenient to pipette about $\frac{1}{2}$ cubic centimetre of material from the bottom of the centrifuge glass, and to spread this in a thin layer over the greater part of an ordinary microscope slide. It was then examined quickly with a low power. When necessary, for purposes of identification of casts and their structure, higher powers were employed.

Nature of Casts Present.

Almost all the casts found were either epithelial or of hyaline nature; very few blood casts were encountered. The epithelial casts varied much in the stage of degeneration presented by the epithelium, but the majority of them showed the usual appearances seen in acute nephritis, where the outline of the individual cell is often fairly distinct. The hyaline casts also comprised many of the ordinary clear ill-defined variety, but a very considerable number were definitely granular in structure, and might be referred to as hyalo-granular casts. All stages of granularity, from many comparatively large well-marked particles to a very few small ill-defined granules, were observed, but in all such cases the matrix of the cast presented a definite hyaline appearance.

For statistical purposes, the casts were therefore divided roughly into two classes—epithelial and hyaline—and were characterized entirely on the appearance presented by unstained specimens, since the large number of deposits examined did not permit of a more detailed examination.

In the great majority of cases where epithelial casts were present, hyaline casts were found as well, but in many specimens hyaline casts alone were found. While many authorities believe that the presence of epithelial casts—at any rate, in moderately large numbers—is pathological and indicates some definite lesion of the kidney, it is often supposed that the hyaline variety is of little significance. From what we see, however, in the urines of patients who are suffering from acute nephritis, it is certain that the hyaline variety may in many cases be the only casts present. In such patients, even when the disease is well marked, as indicated by the usual symptoms, it often happens that the urine contains only a few small hyaline casts, while in other cases very large numbers of this variety of cast may be present. On the other hand, it may be quite impossible to find epithelial casts.

It might be observed here that with the exception of certain cases of acute nephritis, the epithelial cast is present on the whole in smaller numbers than the hyaline cast. The importance formerly attached to the presence of one or two

epithelial casts in a specimen of urine might have been dependent, to some extent, on the conditions under which their presence was indicated. Not so long ago it was the custom when looking for casts to allow the urine glass to stand for some time, and then to examine the sediment. In this case, however, casts might easily be missed even when present in fair numbers, and when a few were actually found it was almost certain that such a urine really contained a considerable number. Under modern conditions the use of the centrifuge makes it very much easier to isolate casts from urines which contain only a very few, so that the presence of one or two epithelial casts in the deposit from a centrifuged urine gives no indication that many casts are really present, whereas the finding of casts by direct examination generally means that the urine contains considerable numbers. Results obtained by means of the centrifuge cannot therefore be compared with the results obtained by direct examination of the urine.

As will be observed by referring to the tables given later on, the presence of casts was by no means confined to urines exhibiting a high grade of albuminuria, for, in several cases, urines with only a trace of albumin contained large numbers of epithelial casts, while in other cases many hyaline casts were found. Such results are by no means rare in ordinary practice where they are generally associated with a condition of chronic interstitial nephritis. In practically all such cases which the writer has seen in hospital practice, the kidneys were found to be markedly defective as indicated by the diastatic test. In the cases found in soldiers in France, however, the combination of large numbers of casts with mere traces of albumin was not apparently associated with any appreciable degeneration of the renal tissue, for the diastatic reaction was normal in the great majority of the cases in which it was used. The very large numbers of urines dealt with in this investigation precluded the possibility of applying this test to all such urines, but a considerable number were examined. With the exception of a very few cases, the diastatic reaction was between fifteen and twenty-five—figures practically identical with those obtained from normal urine.

It is not improbable that casts may sometimes occur in urines which are free from albumin, but it is certain that this is very rare, for in 100 specimens of normal urine examined no casts of any kind were found. This view is further borne out by the fact that the percentage of urines with a very small amount of protein which contained casts was comparatively small; in this connexion it was observed that urines which gave only an exceedingly faint reaction with salicyl-sulphonic acid (certain of the urines of grade NN) rarely contained casts. In no case were epithelial casts found in such specimens, and in the few cases in which hyaline casts were observed, the number was usually limited to one or two. In order to settle the question definitely it would, of course, be necessary to examine several thousands of protein-free urines, but there was no time for this during the present investigation.

With regard to certain of the urines stated to contain hyaline casts only, it is possible that a few of them might have contained a very small number of epithelial casts as well, but it is certain that this could be the case only in a very few instances, since the examination for casts was carried out very carefully, several specimens of deposit from the same urine being sometimes examined.

Occasionally a few blood casts were found associated with epithelial casts,

but the former were of such infrequent occurrence that no special record of them was kept.

Along with casts several other elements were found in the deposits, but nothing abnormal was observed. The extremely common occurrence of calcium oxalate crystals, which at some periods were present in large amount in almost every urine examined, is perhaps worth noting. No explanation of this phenomenon could be found in the nature of the diet partaken of at the particular period.

General Results Obtained.

For the 50,000 men examined, the average percentage of urines found to contain casts was 1·87; of this number 0·84 per cent had definite epithelial casts, while in 1·03 per cent hyaline casts only were found. The percentage of casts in the various groups of 10,000 men is indicated in the table. It will be seen that the figures in the different groups correspond fairly well.

TABLE VIII.—Percentage of Casts in Five Groups of 10,000 Men each.

	Total percentage with casts	Percentage with epithelial casts	Percentage with hyaline casts
1st group of 10,000 men ..	1·60 ..	0·75 ..	0·85
2nd ,, ,, ..	1·52 ..	0·88 ..	0·64
3rd ,, ,, ..	2·01 ..	1·00 ..	1·01
4th ,, ,, ..	2·13 ..	0·9 ..	1·23
5th ,, ,, ..	2·10 ..	0·65 ..	1·45

(*To be continued.*)

Reviews.

The Complete Medical Pocket Formulary. By J. C. Wilson, A.M., Physician to the German Hospital, Philadelphia. Sixth Edition, by C. H. Turner, M.D. Philadelphia: J. B. Lippincott Co. Price 10s. 6d. net.

This classified and indexed list of prescriptions, which has reached its sixth edition, evidently supplies a want felt in America, if not in this country. Details of the prescriptions are given in both imperial and metric systems and a therapeutic classification is adopted. One cannot feel that such lists are of material assistance to the therapeutist and to instance the formulæ advised for hæmaturia, few of these are likely to benefit the patient, while under neuralgia and suppositories prescriptions advising the local application of morphine are retained. Diet tables are given in which one finds beet advised and also disadvised in diabetes. The book is conveniently arranged for reference and handsomely bound, but in our opinion it requires a thorough and very critical revision in the light of modern pharmacology and therapeutics. W. J. D.

Surgical Therapeutics and Operative Technique. By E. Doyen. English Edition by H. Spencer-Browne. Pp. viii + 680. $10\frac{3}{4} \times 6\frac{1}{2}$. London: Baillière, Tindall and Cox. 1918. Price £5s. net.

This, the second volume of Doyen's book, is devoted to a description of such operations on the head, neck and extremities as were practised by the late Professor Doyen. It will be perused with interest not only by the general surgeon, but also by the specialist, for Doyen was a very catholic surgeon and

nothing came amiss to him. He describes with equal authority his technique for dental extraction, for amputation, or for the removal of adenoids. The book is written with the directness and simplicity one is accustomed to expect from French authors and it is well printed, well bound, and profusely illustrated.

There is much that is original, but all the methods described appear to have given Professor Doyen good results. He was obviously a master of technique and operated with extreme rapidity. But whether high speed and successful surgery are necessarily synonymous is perhaps open to some doubt.

The value of the book is not perhaps so great as one might expect. All operations therein described sound easy, but there is not enough detail given to satisfy the requirements of the beginner, while surgeons of experience would certainly wish for further information about results before adopting the same methods.

A statement occurs on page 2 to the effect that the author has obtained resolution of phlebitis of the cavernous sinus in many instances by one or two injections of anti-staphylococcic vaccine. It scarcely seems possible that any one surgeon should have seen "many instances" of thrombosis of the cavernous sinus, still less that he should have been able to cure such a deadly disease by one or two injections of vaccine. Later on it is stated, "about the same time I succeeded in obtaining a complete cure of many cases of recurrent sarcoma of the clavicular region by thermo-coagulation." These are not solitary instances of dogmatic statements making claims which seem hardly credible, but they occur throughout the book and seriously invalidate its authority as a trustworthy guide to surgical therapeutics.

Doyen is dead; he was a wonderful operator and had a wonderful belief in himself, in his mycolysin for curing inflammatory lesions, and in his anti-neoplastic vaccine for curing malignant growths. At any rate his manual dexterity was indubitable and he will always go down to fame as the first surgeon to have his operative technique recorded on the cinematographic film. C. R.

A Manual of Physics for Medical Students. By H. C. Candy. Pp. viii + 451. $6\frac{1}{4} \times 3\frac{7}{8}$. London: Cassell and Co., Ltd. Twentieth Edition. 1918. Price 7s. 6d. net.

Three half crowns is not too much to pay for this compendium of physics, which appears to comprise all that is required by the medical student for the purpose of preparing himself for examination.

Part I, "General Physics," is well written and illustrated by numerous figures. The other parts deal with special subjects in a manner usually adequate.

But the student who desires to read Bayliss' "General Principles of Physiology," will need more than this. R. M. S.

JOURNAL

OF THE

ROYAL ARMY MEDICAL CORPS.

Corps News.

SEPTEMBER, 1918.

EXTRACT FROM THE "LONDON GAZETTE."

War Office.

July 26, 1918.

His Majesty the King has been graciously pleased to approve of the following awards to the undermentioned Officers, in recognition of their gallantry and devotion to duty in the Field :—

AWARDED A BAR TO THE DISTINGUISHED SERVICE ORDER.

Capt. (Acting Lieut.-Col.) Francis Casement, D.S.O., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty when he evacuated all the wounded and salved a large quantity of surgical material, blankets and stretchers during a long retirement. His courage, coolness and resource were most marked during the whole of this trying period. (D.S.O. gazetted June 4, 1917.)

Major (Temp. Lieut.-Col.) Hugh Allan Davidson, D.S.O., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. When in command of his unit he maintained the advanced dressing station in spite of heavy shelling by the enemy, only withdrawing when ordered to do so. He visited the regimental aid posts under heavy shelling, and by his example and energy many casualties were evacuated which might otherwise have been lost. (D.S.O. gazetted January 1, 1917.)

Capt. (Acting Lieut.-Col.) Thomas Swan Eves, D.S.O., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. He was in charge of an advanced dressing station which was being heavily shelled by the enemy, and he personally and thoroughly carried out a complete change of organization. Later, he was superintending the loading of ambulance cars near a railway bridge which was a special target for the enemy's guns, and though twice thrown over and bruised by bursting shells he stuck to his post till all the wounded had been dressed and evacuated. His fine performance under continuous shell fire till the enemy were close upon him was a splendid example to all. (D.S.O. gazetted January 1, 1918.)

Lieut.-Col. Fitzgerald Gabbett Fitzgerald, D.S.O., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. When his casualtry clearing station was heavily shelled he not only evacuated his patients to places of safety, but salved practically all the stores of his unit. This action was performed twice over, and on both occasions his courage and ability were prominent. (D.S.O. gazetted January 1, 1917.)

Major (Temp. Lieut.-Col.) Harry Beatty Kelly, D.S.O., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. When the camp, in which over forty stretcher cases were collected, was heavily shelled, he collected the bearers and removed the wounded to a position of safety. Again, when the infantry were being withdrawn, he collected casualties with the bearers and carried them through a heavy barrage to the ambulance cars, thus saving several lives and setting a fine example to his men. (D.S.O. gazetted January 1, 1917.)

Lieut.-Col. John Powell, D.S.O., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during a long period of active operations. Owing to the great number of extemporized formations from the divisions, which increased continually from day to day, the task of providing adequate medical facilities was one of extreme difficulty. By his indefatigable energy and powers of organization he successfully met all demands, and completed the evacuation of all wounded with splendid efficiency. On one occasion, hearing some wounded had been left behind, he went himself, under heavy and continual shell and machine-gun fire, with three ambulances, and brought them in. Throughout, his conduct was beyond all praise. (D.S.O. gazetted June 3, 1918.)

Temp. Capt. (Acting Lieut.-Col.) Lawrence Drew Shaw, D.S.O., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. He was placed in charge of the forward division of the combined field ambulances. Although constantly exposed to heavy shell and machine-gun fire, he organized the system of evacuation and extended it to neighbouring divisional units. By his inspiring example and disregard of danger he ensured a complete and successful evacuation of the wounded. (D.S.O. gazetted June 4, 1917.)

Capt. (Acting Lieut.-Col.) William Tyrrell, D.S.O., M.C., M.B., Royal Army Medical Corps (Special Reserve).

For conspicuous gallantry and devotion to duty when in charge of a line of evacution. He worked continuously for six days, and it was due to his gallantry, organization and energy that touch was maintained so efficiently with the brigades, and so many casualties evacuated. He displayed great courage and coolness throughout, and inspired those under him by his fine example. (D.S.O. gazetted January 1, 1918.)

AWARDED THE DISTINGUISHED SERVICE ORDER.

Temp. Capt. (Acting Lieut.-Col.) Kenneth William MacKenzie, M.C., M.B., Royal Army Medical Corps (late Capt. Indian Medical Service).

For conspicuous gallantry and devotion to duty when in charge of the forward evacuation, when he kept in touch with the retiring infantry, continually searching for and collecting the wounded. It was largely due to his great energy, skill and foresight that so many of our casualties were so successfully evacuated.

Capt. (Acting Lieut.-Col.) Arthur Thomas Pitts, Royal Army Medical Corps (Special Reserve).

For conspicuous gallantry and devotion to duty. He established a dressing station in a forward and very exposed position. During two days and two nights he remained under continuous and terrific shell fire, dressing wounded and evacuating them. His courage and endurance under most trying conditions saved many valuable lives.

Capt. (Acting Lieut.-Col.) Leopold Thomas Poole, M.C., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during a hostile attack. Hearing that a large number of wounded were uncollected owing to normal communications having been cut by the attack, he proceeded at once to the area, which was subjected to a sustained bombardment, and organized stretcher parties, sending up all his available cars. It was owing to his fine courage and prompitude that upwards of 300 casualties were not left unattended.

Temp. Capt. Frederick Naylor Stewart, M.C., M.D., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. He collected and dressed cases under the most intense shell fire, and on two occasions, by remaining behind after the order to withdraw had been given, succeeded in evacuating all the stretcher cases. He set a high example of courage and self-sacrifice. He was wounded in the face and thigh.

Temp. Capt. James Lennox Stewart, M.C., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. Although his aid post was in the open, a few yards behind the front line, he remained there, caring for the wounded, and through his efforts they were all dressed and evacuated. He was the only medical officer of the Brigade left.

Capt. (Acting-Lieut.-Col.) Charles Herbert Stringer, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station. Owing to the whole force retiring, the collection and evacuation of large numbers of wounded, who were lying in thick woods, was a task of extreme difficulty in view of the rapid advance of the enemy. Although subjected to heavy fire, he remained behind till the enemy were almost up to his position, and by skilful organization he succeeded in evacuating practically all the wounded. His magnificent courage and devotion saved many wounded from falling into the enemy's hands.

Capt. (Acting Lieut.-Col.) Joseph Hugh Ward, M.C., M.B., Royal Army Medical Corps (Special Reserve).

For conspicuous gallantry and devotion to duty while in command of a cavalry field ambulance During two days of intense fighting, in spite of the enforced moves of his unit, he continued to keep an A.D.S. open until the last possible moment to deal with large numbers of wounded, only

retiring when all had been evacuated and when ordered to do so. Throughout this period he showed an example of pluck and determination beyond all praise.

Temp. Capt. Roger Llewellyn Williams, M.C., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during operations, when, with the C.O. and adjutant, he was the last to withdraw. Shortly after, the C.O. was severely wounded, but, with the assistance of another officer, he carried him away for over half a mile under intense machine-gun and rifle fire at close range. Afterwards he continued to dress the wounded, including the adjutant, under the most intense fire, and throughout the withdrawal he showed the utmost energy and devotion to duty.

Temp. Capt. (Acting Major) Herbert George Willis, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. When in command of a bearer division of the field ambulance throughout ten days' fighting, he kept all in order by visiting the R.A.P.s and ambulance relay posts, and when the trolley line was destroyed by shell fire he reorganized the system of evacuation, going round the posts and making the necessary arrangements at great personal risk. By his action he ensured the clearance of the wounded.

Australian Imperial Force.

Major Archibald John Collins, M.C., Australian Army Medical Corps.

For conspicuous gallantry and devotion to duty when in charge of the evacuation of wounded during intense fighting. Although the A.D.S. in which he was located was subjected to heavy enemy artillery fire, by his splendid energy, coolness and courage, he was enabled to evacuate safely several hundred casualties. His magnificent example inspired all who came in contact with him, and stimulated junior officers and exhausted stretcher-bearers to further efforts.

AWARDED A SECOND BAR TO THE MILITARY CROSS.

Temp. Capt. (Acting Major) Charles Bromley Davies, M.C., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty while in charge of an advanced dressing station. His energy throughout whilst supervising the collection of the wounded was remarkable, and it was due to him that the collection and evacuation of the wounded was so quickly and thoroughly carried out. Though slightly wounded he remained at duty for another eight days, when he was severely wounded. His courage and energy were of a very high order. (M.C. gazetted August 25, 1916.) (Bar to M.C. gazetted July 18, 1917.)

Temp. Capt. James Wallace MacFarlane, M.C., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty in going under heavy shell fire to the assistance of a wounded man who was lying in the shelled area, dressing his wounds, and getting him safely to cover. He without doubt saved the man's life. (M.C. gazetted July 26, 1917.) (1st Bar gazetted February 4, 1918.)

AWARDED A BAR TO THE MILITARY CROSS.

Temp. Capt. Phillipe Bernard Belanger, M.C., M.D., Royal Army Medical Corps.

For gallantry and devotion to duty when the enemy had penetrated the defences on the left of his battalion in support, and were outflanking battalion headquarters. He went across 300 yards of ground swept by severe machine-gun and rifle fire to assist a wounded officer, and had him carried into safety. He displayed great courage and self-sacrifice throughout operations. (M.C. gazetted October 18, 1917.)

Captain (Acting Major) Henry Bryan Frost Dixon, M.C., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. This officer remained behind in "No Man's Land" and dressed three officers under extremely heavy machine-gun fire, and helped to carry a wounded man more than two miles to a place of safety. Later, he continued to dress all wounded although practically surrounded by the enemy. His cheerfulness and disregard of personal danger under these exceptionally trying circumstances, inspired all ranks. (M.C. gazetted November 14, 1916.)

Capt. Walter Elliot Elliot, M.C., M.B., Royal Army Medical Corps (Special Reserve).

For conspicuous gallantry and devotion to duty. He established a regimental aid post and for twelve hours, assisted by two officers, and in spite of continuous shelling, attended to over 250 wounded and succeeded in evacuating all to the dressing station. It was due to his personal courage and example that this was successfully carrried out. (M.C. gazetted June 18, 1917.)

Capt. (Temp. Major) James Douglas Fiddes, M.C., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. In charge of an advanced field dressing station which was heavily shelled, he successfully evacuated all the wounded to a safer place. He also went up to the front when the officer in charge there was exhausted and gassed, and superintended the evacuation of all the wounded. (M.C. gazetted February 4, 1918.)

Temp. Capt. James Phillips Jones, M.C., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. He was in charge of an advanced dressing station, and when the village had been temporarily evacuated he was entirely responsible for the

getting away safely of many of the wounded. Throughout the ten days of the battle he displayed the most conspicuous ability, cool courage and devotion to duty. (M.C. gazetted February 4, 1918.)

Temp. Capt. Ronald Sinclaire Kennedy, M.C., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. When in charge of advanced bearers he collected and led forward reinforcing bearer-squads in a most gallant manner through a heavy barrrage and through lines of retiring infantry, until he gained touch with the regimental aid post. He cleared many wounded who would otherwise have been left to the enemy. A splendid example of persevering gallantry and fearlessness. (M.C. gazetted September 26, 1917.)

Temp. Capt. (Acting Major) John Samuel Levis, M.C., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty when in charge of stretcher-bearers at the advanced dressing station, his courage and example in leading squads over heavily shelled ground were the means of saving many lives. When ordered to evacuate, he displayed great ingenuity and resource in saving his personnel and equipment. Throughout the operations he has rendered most valuable services. (M.C. gazetted January 26, 1917.)

Temp. Capt. James Manuel, M.C., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty whilst battalion medical officer. During a withdrawal he frequently dropped back unaccompanied by medical staff and under very heavy fire attended to casualties. His conduct throughout the operations was of a high order. (M.C. gazetted February 4, 1918.)

Temp. Capt. John Hay Moir, M.C., M.D., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. During a withdrawal he repeatedly went into the open under heavy fire, to attend to the wounded. Throughout the withdrawal seven officers of the battalion were wounded. That only one was left in the hands of the enemy was largely due to the magnificent courage which he displayed. (M.C. gazetted November 14, 1916.)

Temp. Capt. George Rankine, M.C., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during a withdrawal. He superintended the evacuation of wounded without rest and at great persoual risk, notably when the left flank became exposed, and he led the bearers with great courage near the railway embankment and evacuated all the wounded under heavy artillery and machine-gun fire. (M.C. gazetted November 4, 1915.)

Temp. Capt. Charles Roche, M.C., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty in evacuating wounded from the front line to the advanced dressing station. Four out of the five collecting posts occupied by him were heavily shelled, but he continued to work incessantly, and evacuated a large number of wounded. M.C. gazetted October 20, 1916.)

Capt. Thomas Victor Somerville, M.C., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. When his battalion was about to withdraw and the wounded could not be brought to his aid post in time, he went up to the firing line and stayed there attending to the wounded till all the troops had withdrawn. His gallant conduct saved many lives. (M.C. gazetted January 14, 1916.)

Capt. (Acting Major) John Stephenson, M.C., Royal Army Medical Corps (Special Reserve).

For conspicuous gallantry and devotion to duty in continuing to dress cases in the open under heavy shell fire. When the advanced dressing station was heavily gas shelled and several casualties he saved many of the patients and staff from being gassed by his example and coolness. On one occasion he went through a heavy barrage to the regimental aid post and by his coolness and judgment all ranks were encouraged to persevere in clearing the wounded. (M.C. gazetted September 26, 1917.)

Temp. Capt. Charles Gordon Timms, M.C., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during recent operations. He continued to collect and evacuate wounded from his post, though several times nearly surrounded by the enemy and under heavy sdell fire. By his fine courage and self-sacrifice he was able to get away a large number of wounded under most difficult conditions. (M.C. gazetted July 18, 1917.)

Temp. Capt. John Wilfred Watthews, M.C., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during the evacuation of a line. He displayed the utmost courage and coolness in evacuating wounded under very heavy shell fire, and it was entirely owing to his energy and personal example that the whole of the wounded were got away in safety. Later, having lost the whole of his medical outfit, he rendered invaluable assistance in rallying the men in his vicinity. (M.C. gazetted November 26, 1917.)

Awarded the Military Cross.

Temp. Capt. Edward Arthur Aldridge, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty at the dressing station, remaining until the enemy were upon him and having cleared his aid post, working his way back, collecting the wounded and attending to them under heavy shell fire. His courage and self-sacrifice set a splendid example, and were worthy of the highest praise.

Temp. Capt. William Brodie Gurney Angus, M.B., Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty during recent operations. He was the means of saving the lives of many officers and men, especially on one occasion when the brigade suffered severe casualties from shell fire. He was untiring in carrying out his duties and removing the wounded to a place of safety.

Capt. John Webster Archibald, M.B., Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty during recent operations. The battery position of the brigade was subjected to an intense bombardment in connexion with the enemy attack, and although shell fire round his own headquarters was severe, he visited all the battery positions himself, instead of having the casualties brought to him. His complete disregard for personal safety in order to save the wounded being brought through the enemy barrage undoubtedly resulted in the saving of life and of many casualties. His courage and cheerfulness under a heavy and continuous strain was of the greatest value, and a fine example to all.

Qmr. and Hon. Capt. James Harvey Bounds, Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty. He volunteered to take transport to an advanced dressing station for the purpose of removing valuable medical stores and equipment, and successfully carried this out, passing through a heavy barrage, and was the means of bringing away and saving two medical officers and twenty stretcher-bearers who had thought it too late to get away. His courage and resource were most marked.

Capt. (Acting Major) Charles Philip Brentnall, Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty during two days at an advanced collecting post under conditions of great danger. Although heavily shelled he succeeded in keeping his post clear and getting away all the wounded. The collection and evacuation of wounded was rendered particularly difficult owing to the fact that the troops were executing a withdrawal.

Capt. Charles Herbert Budd, M.B., Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty in attending to wounded under fire. Under heavy shelling, he went forward and dressed wounded, and dressed one man under full observation of the enemy.

Temp. Capt. George Milne Cameron, Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty when in charge of bearers. He worked incessantly for twelve hours collecting and evacuating the wounded under heavy shell and machine-gun fire. Many cases were successfully got away, which, but for his determination and absolute disregard of danger, would have fallen into the hands of the enemy.

Capt. David Campbell, M.B., Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty, when on two occasions he was the only medical officer left with the brigade. He organized regimental aid posts and established lines of evacuation, and during a long exposure to shell and machine-gun fire set an inspiring example to all.

Temp. Capt. Dugald Stewart Campbell, M.B., Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty. He worked without rest, and when it was necessary to retire successfully brought away all the wounded, in spite of the district being subjected to a heavy gas bombardment. He was undoubtedly the cause of saving the lives of many wounded.

Temp. Capt. Thomas Hay Campbell, Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty. When under heavy shell and machine-gun fire he organized a forward aid post and evacuated over 500 wounded. No wounded man was allowed to pass without personal attention, in spite of the difficulties of doing so in an exposed position.

Capt. Louis Abel Celestin, Royal Army Medical Corps.
For conspicuous gollantry and devotion to duty. He remained with a party which was covering the retirement, and attended to the wounded under heavy rifle and machine-gun fire. Later, he dressed a medical officer's wounds, and carried him single-handed for a distance of over half a mile through heavy fire, when the officer he was carrying died of wounds.

Temp. Capt. Richard Collier Coatsworth, M.B., Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty during an enemy attack. He early led his regimental stretcher-bearers through very heavy shell fire to remove all wounded that could be found. He organized the removal of wounded, and by his perpetual cheerfulness and coolness set a fine example to his men, and effected the successful evacuation of many wounded.

Qmr. and Hon. Lieut. Henry Arthur Charles Cole, Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty while in charge of the operations at the trains in which the casualty clearing station equipment was being loaded. For many hours the locality, and particularly the railway line, was being heavily shelled, but he voluntarily remained on duty for over twenty-four hours after a heavy day's previous work, and it was mainly owing to his splendid example that almost all the equipment was safely got away.

Temp. Capt. Alan Gibb Cook, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty while clearing wounded under heavy machine-gun and shell fire during an enemy attack. When the officer in charge of the bearers became a casualty, he carried on the evacuation of the wounded, though badly gassed himself. He frequently led squads to the front line in search of wounded, and showed great disregard of danger.

Temp. Capt. William Francis Cornwall, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. When the enemy carried out a heavy bombardment with large calibre shells and gas he established on his own initiative a dressing-station, and continued to deal with cases of various units for five hours, during which time the shelling was intense. To evacuate the wounded he organized stretcher parties of prisoners, no other means being at the time available.

Temp. Capt. James Robert Craig, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. He kept in touch with the retiring troops, evacuating the wounded without relief for eight days and nights. While the advanced dressing-station was under heavy fire, and all the other officers had been either killed or wounded, he continued to carry on his work.

Temp. Lieut. Gwilym Charles Montague Davies, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. When a neighbouring village was being heavily shelled, he went there to see if he could help. Finding that the field ambulance had withdrawn, he re-opened the dressing station, and remained there for hours, managing to evacuate a large number of wounded.

Temp. Capt. Llywelyn ap Ivan Davies, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty when, all the Royal Army Medical Corps in an area having been taken by the enemy, he was sent up to establish a system of evacuation. In spite of heavy shelling, he kept his cars and bearers working for twenty-four hours, only retiring when the infantry passed him, and by so doing prevented many of the wounded from falling into the hands of the enemy.

Temp. Capt. Edward Forbes, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. While the battalion was preparing to march off, three officers and thirteen men were wounded; this officer attended to them all under heavy fire. Later he was wounded while attending to his duties.

Temp. Capt. (Acting Major) Charles Colder Forsyth, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. Hearing that help was urgently required at a certain point, he organized stretcher-bearers to clear away the wounded, of which there were over 200. He remained in the area, which was heavily shelled, during the whole afternoon and until all the wounded had been evacuated. His splendid courage and initiative in organizing this evacuation undoubtedly saved the lives of many of the wounded who would otherwise have perished.

Capt. Charles Wainwright Fort, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during several days, when acting as bearer officer. The conditions under which the wounded had to be collected and evacuated were particularly difficult owing to the fact that the troops were executing a withdrawal. By his total disregard of danger, and initiative in bringing forward his bearers, often under heavy shell fire, he succeeded in clearing large numbers of the wounded.

Capt. Frederick Gamm, M.B., Royal Army Medical Corps (Special Reserve).

For conspicuous gallantry and devotion to duty for several days when in charge of an advanced dressing station, and until it was almost surrounded by the enemy. During this time, although under a continuous and heavy bombardment, he continued to dress casualties and organize stretcher squads, which he took out to search for wounded. By his courageous action many wounded were collected and evacuated, and his splendid example was a fine stimulus to all.

Temp. Capt. David Gillespie, M.D., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. During recent operations he did most useful work in tending wounded and arranging for their removal under fire. The work was often done under heavy machine-gun fire at medium range. His coolness and fine example greatly contributed to successful evacuation being carried out.

Temp. Capt. Morley Edward Gorman, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty in carrying on his work when the dressing station was destroyed by shell fire, and in visiting his posts and superintending the evacuation of the wounded under heavy shell fire. Throughout the operations he displayed the utmost coolness and contempt of danger, his cheery optimism and energetic personal example inspired confidence in all.

Temp. Capt. (Acting Major) Howard Boyd Graham, D.S.O., M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty while in charge of over 300 bearers, always under heavy shell fire and often under machine-gun fire at close range. It was due to his

judgment that the wounded were evacuated with a minimum possible loss in personnel. On one occasion, being cut off by the enemy, he led his party to safety by a wide detour. When his dressing-station was heavily shelled, with the infliction of heavy casualties, he organized the rescue work, rallied the shaken bearers, selected the line of evacuation, and, with the aid of another officer, evacuated fifty-four casualties to a place of safety. His conduct through this fiery ordeal was magnificent.

Temp. Capt. Edward William Dacre Hardy, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. His dressing-station was situated at cross-roads, the only place available, and during a whole day was obviously a target for exceptionally intense bombardment. He displayed the greatest courage and supreme contempt of danger, remaining at his post and dressing wounded the entire day while everybody else was dug in.

Temp. Capt. George Francis Palmer Heathcote, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty throughout many days of active operations. He was absolutely tireless in his work of rescuing and caring for the wounded, and freely exposed himself to heavy rifle and machine-gun fire in carrying out his duties. By his splendid courage and energy throughout the whole operations, he was instrumental in getting away most of the wounded.

Temp. Lieut. Robert John Helsby, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty when the battery area being heavily shelled he dressed the wounded with complete disregard of personal safety, and in spite of being blown up in a house and badly shaken.

Temp. Capt. Francis Henderson, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. Throughout ten days' fighting this officer set a splendid example. On one day for twelve consecutive hours he was engaged in leading squads of bearers to and from the regimental aid posts. He frequently dressed men in the open when their condition needed it. He brought a wounded officer back in a car, several times stopping it under heavy fire to make the officer more comfortable.

Capt. (Acting Major) Howard Henry, M.D., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during several days when acting as bearer officer. The conditions under which the wounded had to be collected and evacuated were particularly difficult, owing to the fact that the troops were executing a withdrawal. By his total disregard of personal danger and coolness he set a brilliant example to the bearers under his command, and undoubtedly was the means of saving many lives.

Capt. Robert Alexander Hepple, Royal Army Medical Corps (Special Reserve).

For conspicuous gallantry and devotion to duty. The advanced dressing station was hit by three shells simultaneously, when the building was demolished and several men killed or wounded. He at once set to work to recover the wounded from under the debris and did not leave till all had been cleared, in spite of the continued intense shelling of the vicinity.

Temp. Capt. Stewart Hodgson, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during recent operations. For a whole day, often under direct rifle and machine-gun fire, he attended the wounded and directed their evacuation. Although wounded, he continued his duties with exceptional coolness and skill until the advancing enemy compelled withdrawal.

Temp. Capt. Hugh Llewellyn Glyn Hughes, D.S.O., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. He worked day and night in the open in spite of the heaviest shell and machine-gun fire, tending the wounded and helping them back to safety, with a spirit of cheerfulness and self-sacrifice rarely seen. After being wounded he still continued to perform his duties, until the wound necessitated his evacuation.

Temp. Capt. Thomas William Jackson, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during an enemy attack. He was with two other medical officers in a dressing station when the troops in front fell back. The dressing station was full of wounded, and this officer continued with the two others to tend the wounded despite the close proximity of the enemy, till, thanks to a counter-attack by our troops, every case was cleared. This was a fine act of courage and devotion to duty.

Temp. Capt. George William Blomfield James, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty throughout a retirement in remaining behind with the rearguard, dressing and evacuating wounded under very heavy fire, until his medical stores were exhausted and he was in danger of being cut off. It was due to his tireless energy that so few wounded fell into the hands of the enemy. His resource and cheerfulness throughout were a real encouragement to all.

Capt. Arthur Morrell Johnson, M.D., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty in tending and evacuating the wounded in the front line and under continual fire. When the order to withdraw was issued he remained till the last, and it was entirely due to his courage and energy that all the wounded were cleared.

Temp. Capt. Francis Esmond Keane, M.B., Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty. Throughout the operations he displayed the greatest courage and grit, working unceasingly without sleep, establishing aid posts, and evacuating wounded under heavy shell and machine-gun fire. His service to the battalion were most invaluable.

Temp. Capt. Richard Kenefick, M.B., Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty. While the regiment was consolidating its position, he attended to the wounded quite in the open and under very heavy fire, and arranged for their evacuation. He undoubtedly saved many lives which would otherwise have been lost. He was wounded in the foot, but did not relax his energy, and continued to attend to all the wounded in the vicinity.

Capt. Joseph Illingworth Lawson, Royal Army Medical Corps (Special Reserve).
For conspicuous gallantry and devotion to duty in bringing in wounded under heavy shell fire, with no one between him and the enemy, thereby saving them from being made prisoners.

Temp. Capt. George Austen Lilly, Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty. In order to attend the wounded he frequently crossed an exposed piece of ground 300 yards in length. Later, when the horses had to be moved owing to heavy shelling, he rescued a badly wounded man, carrying him to safety.

Capt. Henry Guy Ludolf, Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty. For six days he worked under continuous fire, and during the last two days was the only doctor on the spot attending to the wounded of five different battalions. He was himself suffering from a severe attack of neuritis, but stuck to his work till assistance came. During these six days his personal heroism and abnegation of self were beyond all praise, and owing to his gallant conduct the lives of many were saved.

Capt. John Alexander MacKenzie, M.B., Royal Army Medical Corps (Special Reserve).
For conspicuous gallantry and devotion to duty at an advanced dressing station, under heavy shell fire, during an enemy attack. He persisted in his work, and successfully evacuated all the wounded before withdrawing his personnel. At another advanced dressing station later he stuck to his duty for seventy-two hours without rest.

Temp. Capt. Alan Cowan Mann, Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty. Throughout eight days' operations this officer did fine work in tending and clearing the wounded. On one occasion, when the line fell back, he remained with the wounded and succeeded in clearing all that could be found before he withdrew. The splendid work done by the stretcher-bearers was due to this officer's organization and leading.

Temp. Capt. Harry Godfrey Massy-Miles, Royal Army Medical Corps.
For conspicuous gallantry and devotion during several days of severe fighting, when he kept in close touch with the battalion, working unceasingly, without rest, during the whole period, dressing the wounded, including the French. He showed great initiative in establishing forward R.A.P.s, reconnoitring their sites beforehand under heavy hostile shell fire, thus greatly assisting the rapid evacuation of casualties. His courage and cheerfulness throughout a period of great strain were beyond praise.

Temp. Capt. William Graeme Denroche McCall, Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty when at a forward collecting post. During an afternoon large numbers of wounded had to be dealt with, and the approaches to the station were subjected to intense shell and machine-gun fire. He maintained the position for many hours, dressing and evacuating all wounded, though later he was in imminent danger of being surrounded. When the post was quite untenable he successfully withdrew all personnel and stores. His gallantry under conditions of extreme danger saved many lives.

Temp. Capt. Roger McGarth, M.B., Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty when in charge of the bearers of his field ambulance. During the enemy's advance and while exposed to heavy shell and machine-gun fire he organized his bearers and evacuated many wounded, who otherwise would have been captured. He set a fine example of energy and courage.

Temp. Capt. Alexander Church Brodie McMurtrie, M.D., Royal Army Medical Corps.
For conspicuous gallantry and devotion to duty. On several occasions he brought in wounded himself under shell fire and by his disregard of danger set a fine example to those under him. Owing to his arrangements and untiring efforts many lives were saved.

Capt. Hamilton Stephen Morre, M.B., Royal Army Medical Corps (Special Reserve).
For conspicuous gallantry and devotion to duty in constantly leading stretcher parties through intense shell and machine-gun fire, in order to evacuate the wounded. On one occasion the whole party except himself became casualties. He dressed his men in the open, and invariably stayed till all had been got away. His cool and determined gallantry was a great inspiration to all the men working under him, and his efforts saved many wounded from being captured.

Capt. Frederick Cecil Nichols, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. When the front line was forced back he maintained his dressing station, in the newly-formed front line until he had attended to every case, in spite of a heavy bombardment. Throughout the four days' fighting he displayed untiring energy and great personal courage.

Temp. Capt. Alger Roy Oram, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. In recent operations this officer under very heavy shell fire continued to attend to the wounded and evacuate cases under the most adverse circumstances. On several occasions, by his fine example and personal courage he saved many wounded who otherwise would have fallen into the enemy's hands.

Temp. Capt. John Lindesay Pearce, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty while in charge of a bearer post. He repeatedly led squads of bearers to parts of the line where wounded were collected, and it was due to his fine example that so many wounded were saved during a period when communication with the front was extremely difficult. He showed courage under shell fire, and was indefatigable in his duties.

Capt. Allan Campbell Pearson, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty when acting as second in command of a casualty clearing station. On several occasions and on different days he superintended the evacuation of wounded under heavy shell fire, and also, with the greatest courage and ability supervised the salving of equipment during bombing and machine-gun fire from hostile aircraft.

Temp. Lieut. Roland Wilfred Pearson, M.D., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty in the performance of his duties during lengthy operations. On one occasion two direct hits were obtained on his post, and a patient, who was being dressed, was killed. On another day he followed the battalion in a counter-attack, and rendered the most magnificent service to the wounded, under heavy machine-gun fire. By his courage, fine example, and great devotion he has at all times inspired his stretcher-bearers, and it was mainly due to him that so many of the wounded were got away by the bearers.

Temp. Capt. James Potter, Royal Army Medical Corps.

For conspicuous gallantry and devotion during lengthy operations, when he continuously attended the wounded under heavy shell, machine-gun and rifle-fire, maintaining his regimental aid post until the enemy had nearly reached it. His splendid example of courage and devotion to duty were beyond praise.

Capt. (Acting Major) William James Purves, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty at a main dressing station, when, by his courage, untiring energy, and grasp of the situation over 1,000 wounded were passed through the station without a hitch, and when, owing to continuous shelling, he had to retire, all cases were got safely away. This was especially difficult, as the troops were executing a withdrawal.

Capt. John Wootton Rammell, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty in dressing the wounded and carrying out his duties under heavy rifle and machine-gun fire. Owing to his ceaseless endeavours and skill all the wounded were evacuated. All ranks speak with admiration of his courage and good work.

Temp. Capt. John King Rennie, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty when, an advanced dressing-station having retired, he organized another in a village, which he only left when the enemy entered it, working all the time under a heavy fire. Subsequently he again organized the evacuation of the wounded under difficult conditions and saved many from falling into the hands of the enemy.

Capt. Henry Whitteron Robinson, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. In spite of continuous shell fire, during which his aid post sustained two direct hits, this officer worked without ceasing, giving unremitting attention to the wounded and organizing bearer squads.

Qmr. and Hon. Lieut. John Robinson, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. On two occasions, when his unit had to be rapidly evacuated, he worked unceasingly, without rest or sleep. The success with which patients were removed to places of safety and valuable Government stores got away without loss was principally due to his energy and determination.

Capt. Peter John Ryan, M.D., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty during lengthy operations in charge of bearers and advanced dressing-stations. He organized the whole forward work, and it was due to his individual efforts and energy that so large a number of casualties were prevented from falling into hostile hands. He worked continuously throughout the whole retreat and his success was such that no wounded man fell into the enemy's hands after once having been put

under the care of the field ambulance bearers. His work was carried out under extremely difficult conditions and often under heavy shell fire. His devotion to duty was quite beyond praise.

Temp. Capt. Cuthbert Scales, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty when in charge of stretcher-bearers. He collected and evacuated many wounded under heavy fire, and remained at his post until forced by the advance of the enemy to withdraw his collecting post farther back. There he continued collecting and evacuating as long as possible, showing a fine example to his men.

Capt. Hubert Shield, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty at advanced dressing stations. Under heavy fire, he managed to save all wounded from falling into the hands of the enemy, and remained doing his duty till his stations were cleared. In one dressing station, which he alone ran for sixteen hours, he dressed and evacuated over 300 men.

Capt. Thomas Copeland Storey, M.B., Royal Army Medical Corps (Special Reserve).

For conspicuous gallantry and devotion to duty. After the withdrawal from a wood, he discovered that some of the wounded had been left behind. He went forward and spent an hour and a half in front of the line, searching the wood, and brought them all back, in spite of considerable hostile fire. Otherwise they would undoubtedly have fallen into the hands of the enemy.

Temp. Capt. Raymond Brewitt Taylor, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. He searched for a missing stretcher-bearer for two hours under heavy shell fire, at last finding him in a shell-hole and assisting to carry him back. Throughout nine days' fighting he was constantly going forward, under fire, searching for and bringing in wounded.

Capt. William Walker, M.B., Royal Army Medical Corps (Special Reserve).

For conspicuous gallantry and devotion to duty. He proceeded to a village under heavy fire and succeeded in attending and evacuating several wounded. He only desisted when the enemy entered the village. Later, he succeeded in releasing a party of stretcher-bearers who had been cut off. Throughout the operations he has shown the utmost energy and courage.

Capt. Henry Ernest Bantry White, M.B., Royal Army Medical Corps (Special Reserve).

For conspicuous gallantry and devotion to duty during recent operations. He was medical officer attached to the battalion, and for eight days he worked continuously without rest and often without food, generally under heavy fire, attending to the wounded. His efforts were tireless, and his courage and devotion to duty were the means of saving many lives.

Temp. Capt. David Roberts Williams, Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty while in charge of bearers in evacuating wounded. On one occasion going back and searching for wounded when, in spite of darkness, barbed wire and torn-up ground, he brought away two men from an abandoned aid post, carrying one on his back. On another occasion it was largely due to his determination and grit that a camp, which was being heavily shelled, was evacuated of all wounded, when he remained till the last and saw that all was clear.

Temp. Capt. Charles Edgar Wilson, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty, when during a rearguard action he worked untiringly in the interests of the wounded, who all were safely evacuated, in spite of having to pass over a long stretch of open ground exposed to fire. Through all this trying time he was cool and cheerful, showing a complete disregard of personal danger.

Capt. Henry Wilson, M.B., Royal Army Medical Corps.

For conspicuous gallantry and devotion to duty. For five days, under all kinds of enemy fire, he showed an utter contempt of danger and disregard of self. His energy and splendid behaviour undoubtedly saved many lives, and through his powers of organization no wounded were left behind when the battalion was relieved from the line.

Australian Imperial Force.

Capt. Kenneth Arthur McLean, Australian Medical Corps.

For conspicuous gallantry and devotion to duty during a heavy attack. Under heavy fire, he personally conducted bearer squads, organized the forward work of evacuation, and exerted himself to the utmost in saving wounded. His fine example served to keep the men under him working at high pressure, and ensured the complete evacuation of the positions.

Capt. Charles Eric Watson, Australian Medical Corps.

For conspicuous gallantry and devotion to duty. Under very heavy artillery fire he continued to dress the wounded for two and a half hours. Though many of the bearers were killed and wounded, he stayed with the stretcher cases, and it was owing to his fine courage and energy that many of the wounded were saved.

SOUTH AFRICAN FORCE.

Capt. William Smith, South African Medical Corps.

For conspicuous gallantry and devotion to duty during active operations. He displayed great courage in carrying on his duties, after being blown up by a shell, which wounded him and killed two of his orderlies, and he remained at duty until the battalion was relieved.

ROYAL ARMY MEDICAL CORPS.

SUPPLEMENTARY ORDER.

TEMPORARY PROMOTIONS.

The following temporary promotions to complete War Establishment will take effect from March 16, 1918.

To be Temporary Serjeant-Majors.

510001 Qmr.-Serjt. A. G. Hyett (with seniority before 322107 Qmr.-Serjt. G. R. Kerr, as published in Corps Order No. 2, dated June 1, 1918).

44002 Qmr.-Serjt. H. E. Dugan (with seniority after 322107 Qmr.-Serjt. G. R. Kerr).

401012 Qmr.-Serjt. C. Barber and 508005 Qmr.-Serjt. G. T. Packham (with seniority after 90466 Qmr.-Serjt. G. R. Smith).

316203 Qmr.-Serjt. J. K. Taylor (with seniority after 90543 Qmr.-Serjt. G. J. Pittman).

303016 Qmr.-Serjt. C. C. Thom, and 92522 Qmr.-Serjt. H. Jagger (with seniority after 28548 Qmr.-Serjt. H. Moore).

93641 Qmr.-Serjt. W. Kilgour and 31901 Qmr.-Serjt. J. McCrone (with seniority after 93669 Qmr.-Serjt. W. Paul).

456003 Qmr.-Serjt. H. W. Barry (with seniority after 18415 Qmr.-Serjt. A. Bell).

120106 Qmr.-Serjt. W. Williamson and 120113 Qmr.-Serjt. A. M. Mowat (with seniority after 18337 Qmr.-Serjt. C. Leaker).

370041 Qmr.-Serjt. R. S. Marks (with seniority after 15483 Qmr.-Serjt. E. Sharp).

495252 Qmr.-Serjt. A. G. Knight (with seniority after 18222 Qmr.-Serjt. A. Dady).

386012 Qmr.-Serjt. J. Murray (with seniority after 89700 Qmr.-Serjt. E. J. Batchelor).

32013 Qmr.-Serjt. J. H. McCracken (with seniority after 318344 Qmr.-Serjt. J. Macfarlan).

308032 Qmr.-Serjt J. W. Jackson (with seniority after 508250 Qmr.-Serjt. W. J. Perch).

34120 Qmr.-Serjt. R. Hollingsworth (with seniority after 17358 Qmr.-Serjt. C. Ennor).

368006 Qmr.-Serjt. J. Bray (with seniority after 12709 Qmr.-Serjt. H. J. Ford).

463003 Qmr.-Serjt. L. Parkhouse (with seniority after 465010 Qmr.-Serjt. E. Pillar).

The following are in order of seniority after 12065 Qmr.-Serjt. A. A. E. McKnight:—

Quartermaster-Serjeants: 120001 E. J. Skidmore, 67713 J. A. H. Glover, 366016 C. B. Bright, 472052 C. Hinton, 444005 B. Rusling, 16301 E. A. Lane, 459207 W. E. Phillips, 533004 F. J. Shaw, 301004 A. Carson, 554036 F. G. Gibbs, 421002 A. K. Hutchinson, 423008 A. H. Collier, 473002 G. W. Lightfoot, 364008 J. E. Rees, 28658 E. J. Downes, 9822 J. Carley, 28269 A. Brookes, 481053 W. C. Hunt, 90489 H. A. B. Greenwood, 39116 E. Mitchell, 534002 J. Williams, 410015 J. T. Meadley, 419477 W. C. Williams, 435017 A. H. Stemp, 473001 W. Carey, 337005 T. H. Potter, 456001 C. S. M. Warwick, 90776 L. H. Barker, 27293 C. E. Evans, 497004 W. G. Mildinghall, 497231 J. H. Hawksworth, 457371 A. Savage, 301010 C. F. Stuart, 341206 H. Houghton, 475166 H. E. Philpott, 307077 W. B. Soutar, 473345 C. W. Geard, 510232 S. H. Sykes, 401153 L. W. Crossley, 354032 J. C. Wilson, 403494 E. Riddiough, 50038 H. Hodges, 392002 E. Handcock, 510036 J. G. Sinclair, 322003 G. M. Byers, 307048 J. J. Gordon, 36448 A. E. Curry, 492005 W. J. Wise, 499125 F. Toye, 437365 S. E. Foss, 36555 H. J. Stark, 23550 A. Keen, 32486 H. Sanders, 44863 F. L. Hearnshaw, 18427 P. Barber (M.M.), 495002 W. E. Hayward, 35273 A. E. Puttick, 11812 W. C. Banks, 37742 F. St. L. Gosley (D.C.M.), 34410 A. H. Purser, 12266 H. Parker, 14609 W. P. Oldridge, 18985 S. Shaw, 10898 A. J. Burke, 12264 W. G. Delamare (M.M.), 12944 C. Jackson, 16048 W. J. Taylor, 10400 T. F. Catley, 16097 E. Bowen, 11700 M. Stroud, 11465 H. G. Lenton, 17381 A. Gray, 17844 W. A. Clenshaw, 339021 J. Cavanagh, 26524 T. H. Garfield, 44572 R. G. Griggs, 32753 J. Q. Evans, 16440 R. Kildea, 14617 H. Ashton, 17159 C. Jones, 16524 H. Fandam, 17576 J. R. Ireson, 386029 A. N. Vinycomb, 27754 F. H. Partington, 24345 S. Donaldson, 21654 A. Gregg, 25261 J. Myers, 26191 E. A. Shilling, 26673 A. Weedall, 27273 J. D. Payne, 27225 W. Lee, 28275 E. Fleet, 388053 J. A. Brennan, 534499 F. W. J. Wheadon, 473180 G. Blows, 339016 T. J. Tinckler, 388004 R. Parker, 36453 W. Gay.

PROMOTIONS.

The following promotions to complete War Establishments will take effect from the dates specified:—

To be Quartermaster-Serjeants.

Dated March 16, 1918.—Staff-Serjeants: 352002 T. H. Kirk, 357021 G. W. Watson, 354030 G. H. Cooke, 536002 J. D. Harbinson, 89000 T. Ramsdon, 92650 F. R. Bray, 477008 E. Johnson, 426003 W. A. Towers, 538013 E. H. Burton, 437547 R. Baker, 89433 E. G. Collett, 439028 V. W. Anderson, 508513 J. C. Sandison, 390035 F. Larard, 368003 G. Cooke, 472004 H. J. Stoten,

357006 J. Wilkinson, 324002 J. Bowie, 512001 J. T. Boyes, 459004 S. Wood (M.M.), 481008 E. H. G. Mansfield, 90872 C. H. B. Fidoe, 467003 F. W. T. Blake, 324006 W. Paxton, 25876 E. B. Griffin, 467002 A. J. S. Pratt, 90052 H. V. Redman, 481001 H. S. Manning, 26001 G. C. Dick, 305003 W. Duncan, 545005 W. Hadingham, 473518 S. Preston, 527013 H. Body, 417039 P. A. Green, 461174 W. H. Teatum, 461158 T. J. Thompson, 461180 J. J. Bicknell, 316087 W. Thompson, 410204 F. H. Hilton, 421003 T. Wood (D.C.M.), 316049 A. Lamont, 435044 E. Capers, 92131 A. D. Haley, 437003 A. H. Dancer, 388008 E. Terry, 388005 J. J. Webster, 545028 F. D. Lewis, 527015 W. G. H. Greenfield, 545003 W. Gibb, 545043 A. V. Tier, 527005 H. B. Cragg, 527008 P. H. Greenwood (M.M.), 500008 W. Trott, 47733 A. E. Ford, 92390 E. Jones, 341034 W. Howard (M.M.), 426071 F. Brelsford, 315001 D. J. McMurray, 527010 S. P. Bristow, 459335 S. P. Redstone, 90454 A. Hay, 29364 T. Cawley, 318002 D. Macdonald, 93642 W. Greer, 545091 A. P. Piggott, 545113 G. Williams, 40053 W. McCarthy, 36001 P. A. Brunton, 32287 L. F. Ball, 56098 D. W. Hannan, 372009 F. W. Vearncombe, 417001 J. Chapman, 426005 A. M. Perkins, 512195 G. A. Fairman, 424001 T. W. Draper, 457007 L. Marks, 527018 S. B. Kenyon, 536006 A. Duckett, 40953 J. Cole, 32624 S. Kynaston, 332001 D. Kelly, 515012 E. H. Hobday, 545269 F. W. Delacour, 395001 J. Hunter, 534004 W. James, 8009 C. E. Grey, 25263 T. Bracewell, 9536 H. E. Mills, 9635 I. T. Rogers, 26096 A. W. Rowe, 26722 F. R. Jones, 25773 A. Vidgen, 26820 P. Harrington, 26818 H. Carrington, 26882 C. Pitkin, 28865 E. J. Brown, 26057 W. H. Ringham, 26942 W. Tims, 301241 L. G. Tough, 401424 A. F. Senior, 120112 G. Sangster, 412001 G. Morrell, 405254 S. Maccabe, 31411 G. Hooker, 37884 H. Orchard, 31148 J. C. Goad, 33408 F. W. Murch, 512317 H. E. Johnson, 344009 E. J. Richmond, 344010 G. Grant, 405256 C. E. Fowlston, 538371 P. E. Dimmock, 408299 A. Clarkson, 303076 W. M. Robertson, 459025 F. C. Roach, 497036 W. J. Rogers, 473070 W. C. Smith, 67737 R. Grant, 30907 R. R. Martin, 32204 V. Adams, 42403 F. M. Ault (M.M.), 30923 C. B. Symes, 37855 J. M. Lees, 310022 F. Rae, 545008 L. Skeeles, 473220 C. M. Coleman, 541019 H. G. Barnard, 40634 H. Marrison, 446004 R. W. Lee, 23334 J. Smith, 22493 S. House, 89504 C. G. Easton, 423002 W. L. Hampson, 59236 G. Garland, 393007 R. Messer, 328001 A. Coupe, 59277 J. W. Brown, 59277 R. Stevenson, 90778 E. Butler, 541012 L. G. Godden, 541043 C. S. Tanner, 527418 A. E. Beaumont, 527541 G. Shipley, 417007 J. Gratton (M.M.), 442020 C. J. Tidsall, 545267 D. Macleod, 35052 S. Holmes, 30147 C. Summers, 8008 P. G. Hayman, 25387 J. E. Barker, 25937 D. Cross, 27425 J. W. Halls.

To be Staff-Serjeants.

Dated March 16, 1918.—Serjeants: 526003 J. J. Hopkinson, 354061 W. A. S. Wright, 536005 W. G. Carroll (M.M.), 495007 W. Sharp (D.C.M.), 388011 W. T. Clark, 477004 J. Morris, 368009 A. L. Hopkins, 515010 H. F. Massen, 495006 W. F. Jenkins (D.C.M.), 493001 H. R. G. Spicer, 388006 V. Lawton, 405234 H. M. Heggie, 366429 E. Duncombe, 350039 T. Howard, 508019 H. Knightbridge, 508011 W. V. Galen, 495015 P. C. Pilcher, 363006 W. T. Vickery (M.M.), 305012 J. Crabbe, 303015 R. Fraser (D.C.M.), 350003 W. Mylchreest, 354004 A. E. Warhurst, 350040 C. G. Wardle, 403167 E. H. Collinson, 330017 C. Coyle, 553004 C. V. Bushby, 512016 A. B. Marshall, 90301 A. J. Sutherland, 386011 W. T. Charlton, 305016 M. Hunter (M.M.), 439012 W. G. Stewart (M.M.), 439055 W. G. Hobbs, 497015 W. H. Morley, 497078 W. Hebditch, 497079 T. H. Bray, 341004 C. McVitty, 534003 G. H. Joyce, 534017 J. W. Hancock (D.C.M.), 534023 G. Jeffreys, 32007 W. Stewart, 424002 T. W. Swabey, 417082 P. Kilmartin, 417006 W. Harrison, 538004 B. A. Williams, 405259 J. H. Preston, 455003 S. C. Flippance, 400094 J. W. Drummond, 339011 W. McDowall, 456005 R. S. Palmer, 536010 F. Burridge, 393009 T. L. Burkitt, 362002 W. Bateman, 339012 J. H. Thorp, 390037 A. Westerdale, 339026 C. Atherton, 433005 W. J. Davies, 386025 J. Dunn, 301925 J. F. Gillanders, 450002 F. E. T. Southby, 497086 C. E. Sheldon, 461185 G. Whitfield, 473093 A. Dickinson, 497050 B. G. E. Harper, 366431 R. Robinson, 417003 S. Blount, 512017 F. A. Ouston, 534048 R. Martin, 435583 J. Wilkins, 435587 G. Harriss, 446020 H. L. Overton, 401458 P. Maury (M.M.), 473007 A. G. Shrubb (M.M.), 403310 G. Blanchard, 372002 W. H. Howell, 543006 E. C. Chappell, 362032 A. Hopley, 301017 J. A. Charles, 341010 A. F. Hampson, 341023 J. Drury (D.C.M.), 401412 J. W. Johnston (M.M.), 341040 W. Gee (D.C.M.), 341088 C. V. Turner, 457068 W. H. Yendall, 92760 P. H. Jenkins, 417009 T. Benson, 382003 H. J. Morley, 510027 W. H. Cummings, 326004 G. Lithgow, 326006 J. Deans, 541014 J. Weir, 25377 C. T. P. Bewley, 25536 F. Hollingsworth, 9740 J. Wilkin, 25411 W. Forbes, 25334 J. W. Shelmerdine, 25295 T. Eglin, 25262 T. Fielding, 25908 H. Quinney, 8121 A. R. Miller, 316440 J. A. Shedden, 512005 G. R. Prior, 534037 E. A. H. Barnett, 512088 T. F. Nicholson, 352036 F. Gleave, 534039 A. H. Robson (M.M.), 410199 W. Nixon, 421016 H. L. Warner, 316429 D. Munro, 25447 D. McArthur, 472003 V. J. Tootell, 426006 C. J. Maddocks, 426031 S. H. Lowe, 25438 G. R. Gawthorpe, 92392 C. J. Marston, 350013 H. Golden, 30582 D. Harris, 26694 T. Chetwood, 27553 C. T. Green, 364023 T. E. Hopkins, 493180 A. G. Brace, 25717 W. S. Hilton, 25745 T. R. Nesbitt, 25754 J. Robinson, 354062 F. Clayton, 354180 J. H. Ashton (M.M.), 442043 R. Wynne, 33469 W. J. Ledbury, 26819 E. J. Coffey, 26824 W. Sumner, 90455 W. W. Roberts, 439569 R. E. L. Fox, 26832 E. Graham, 497005 H. Bosley, 405264 H. W. Allinson, 303056 A. L. Smith, 405281 H. W. Stuart, 405160 H. E. Crofts (M.M.), 472075 H. E. Chapman, 545044 F. A. Dolling, 455049 A. E. Fisher, 90820 W. E. Richens, 455034 J. M. Brinkworth, 38789 A. Onyon, 27106 A. H. Cashmore, 527042 G. H. Fowler, 28701 J. E. Morris, 459016 C. W. Finch, 459151 F. J. Henwood (M.M.), 92651 H. R. J. Rouse, 457013 R. Coleridge (M.M.), 337300 T. C. Lloyd, 120015 E. Lewis, 337211 J. Tickle (M.M.), 357111 S. Shaw, 27556 F. H. Bradley, 92586 A. E.

Rees, 337004 S. H. Brown, 92050 C. B. Warwick, 400107 E. Drummond, 27242 T. Jones, 42562 J. H. Heaton, 416024 H. Leavers, 550015 T. Cross, 419029 J. H. Cragg, 538060 T. H. Treadwell (M.M.), 421508 F. Eld, 423042 R. W. Wardman, 423056 W. N. Stansfield, 42844 T. S. Fairfull, 44301 W. Paul, 533014 H. S. Pierce, 368043 J. Newman, 439206 H. A. Pelley.

To be Serjeants.

Dated March 16, 1918.—Corporals: 400089 J. Fallon, 305008 C. Johnston, 93407 W. Cook, 89980 H. Fishersmith, 337022 W. Ousby, 92393 T. Spooner, 354063 J. Rafferty, 495024 H. Rowsell, 526002 R. Ashton, 459247 W. A. Jenkin, 510012 W. J. Sutton, 510014 C. Coker, 89983 B. Fenwick, 421022 F. Law, 362028 C. G. Faulkner, 92395 A. Whiting, 424003 H. Taylor, 400115 H. Varley, 512023 A. E. Whyte, 386021 R. Rickelton, 341013 W. L. Dean, 337048 P. E. Power, 339063 H. Allen, 93402 A. C. Smith, 90501 J. T. Tucker, 400123 A. Brooke, 89885 L. Speight, 456018 R. Bartholomew, 442002 J. Gilhooly, 483001 W. C. Sandey, 419059 J. A. Stanhope, 362041 W. V. Large, 320025 J. Kelly, 90225 J. McLean, 89510 J. W. Bennett, 433022 E. R. Sales, 318490 G. Millar, 493051 E. T. Brett, 390060 E. Jackson, 417056 F. King, 534052 T. Jewiss, 435590 H. W. Humphreys, 435588 R. J. Harris, 303085 N. McCormack, 456011 C. F. Hayman, 437063 B. Cross, 90004 L. Thurley, 538015 F. W. Hossack, 403480 F. E. Darby, 477012 G. Willmer, 493022 F. H. Woodbine, 352076 W. A. South, 457016 H. Hartwill, 320019 J. Watson, 536021 S C. Cole, 90053 F. J. Stevens (M.M.), 341008 A. Davies, 538043 G. E. D. Gale, 341050 J. Birchall (M.M.), 403586 P. B. Hare, 536043 C. R. Goddard, 90007 C. T. Hart, 388076 T. H. King, 320081 J. Dickson, 526027 F. J. Harris, 400014 A. Sellers, 473491 W. H. Ayers, 534009 G. S. Russell, 534024 W. T. Malin,493034 J. A. Elmslie, 493035 W. Chittenden, 543010 C. Clark, 25006 G. Boyes, 25220 C. Smith, 25235 L. Kitchen, 26124 T. D. Seamer, 26769 C. Morgan, 8011 H. T. Rodd, 497032 A. Dickinson, 497076 F. Barker, 93248 J. Fullagar, 515019 W. H. Edey, 26355 R. Timms, 26354 J. W. Thornley, 9910 W. E. Kelly, 512010 A. E. R. Harris, 503019 T. Yates, 407025 A. A. Watt, 410202 T. Merrill, 9659 H. G. Williams, 301003 J. Morrice, 30532 H. W. Cresswell, 435530 J. E. Lucas, 26718 F. Hill, 493260 H. C. A. Clark, 25752 B. Robinson, 31409 C. Fry, 25757 E. M. Snowball, 34849 M. Brady, 25622 P. Ealding, 337074 J. W. Jones, 25964 W. Barnes, 32194 A. Park, 341082 C. Gabriel, 34795 A. E. Bowyer, 362048 E. Perry, 303030 A. Lyons, 363038 H. J. Roden, 33470 G. Edwards, 457119 C. W. Southcott, 35814 W. Gunn, 461294 L. Barrett, 303064 A. E. Wilson (M.M.), 405100 F. J. Hookham, 54722 A. Archer, 89644 T. H. Cole, 515029 A. Muddle, 455051 E. Harris, 88761 R. E. Lambert, 90663 E M. Ferris, 90664 H. Green, 26980 A. Williams, 27538 J. E. B. Bartram, 42054 C. T. Newton, 46789 J. Martin, 92587 W. Parker, 459131 S. L. Porritt, 322004 J. P. Corlett, 449007 W. J. Vowles, 483023 E. Clarke, 457072 E. A. Bastin (M.M.), 350049 R. Scowcroft, 27318 G. Wardley, 27382 M. H. R. Perrot, 27485 J. Holmes, 39007 J. E. Smith, 459018 G. H. Crocker (M.M.), 42518 R. Holmes, 42544 J. Collinge, 419007 G. H. Horton, 419048 B. Dunkley, 416047 W. A. Cresswell, 419271 J. T. H. Mawbey, 400136 W. S. Lea, 417232 F. H. E. Hydes, 423018 F. A. Forrester, 42848 J. Duncan, 27824 T. W. Edwards, 439007 W. Clark, 439015 J. Carter, 300137 A. Alexander, 475054 S. Cornish, 44006 R. J. Harris, 417331 W. G. Thompson, 27927 W. P. J. W. Lowe, 475008 W. F. Spinks, 89647 W. H. Sidnell, 120036 J. Sugrue, 27867 A. Malton, 27982 F. Garner, 27984 W. J. Harrison, 44927 A. Shuttleworth, 44928 W. Stow, 421033 A. Barrett, 472015 W. F. Stimson, 439068 R. L. Burgess, 90008 F. F. Gregory, 481090 S. A. Webb, 500018 H. Goate, 8812 W. R. Watson.

To be Corporals.

Dated March 16, 1918.—Privates: 533023 F. C. Widdicombe, 528312 J. Hodgson, 352008 T. A. Chappell, 512036 A. C. Perrett, 378002 F. Jordan, 403550 H. H. Turner (M.M.), 457017 C. F. Dart, 350052 J. Wilkinson, 305031 A. Mitchell (M.M.), 386043 R. Gordon, 403567 J. Hillerby (M.M.), 354007 J. T. Barnett, 434013 W. J. Bird, 473020 E. W. Sparrow, 341033 T. Pinkney (D.C.M.), 339047 W. T. Carvick, 456014 J. Green (D.C.M.), 388048 F. Guy, 339049 C. A. Strange, 364050 S. Holvey, 352083 J. H. Clough, 477035 W. J. Frost, 412011 H. Oates, 439061 J. Savery 533020 C. Tonking, 433024 A. Hemming (M.M.), 472021 C. Linger, 433025 H. D. Edge, 461211 H. G. H. Williams, 477051 C. Hernaman, 461119 C. A. Walker, 456016 C. J. Fielden, 362064 F. Taylor, 534079 H. Wykes, 324014 W. G. Tait, 405009 F. Turton, 303051 A. Christie, 493127 J. Woodward, 499157 A. Coleby, 341112 J. O. Blackmore (M.M.), 354086 A. Hill, 405031 J. F. Wilkihson, 493135 A. T. Hoad, 508060 W. J. D. Carter, 316041 W. D. Fothergill, 352114 H. Lodge, 386139 H. P. Hudson, 437098 H. L. Rowe (M.M.), 400019 S. Burridge, 475102 R. Knight, 301116 J. Forsyth, 439156 E. Eastment, 442431 H. Evens, 33044 T. Edkins, 500039 A. G. Boxell, 405094 B. Cox, 8275 H. J. Millgrove, 527058 A. Thompson, 500054 A. Trusler, 500060 E. Brooke, 7925 H. Ernest, 416019 L. Meats, 435563 L. Ratcliffe, 401039 A. Daniels, 442023 A. W. Fisher, 512127 A. F. Hartley, 512130 H. B. P. Owen, 527063 A. H. Scrivener, 324020 D. A. Glennie, 9481 J. A. Biggs, 26662 J. H. Staton, 446043 C. F. Lucas, 495155 L. Small, 30325 J. H. Barker (M.M.), 25893 E. G. L'Estrange, 9237 W J. Gallagher, 366118 T. Jones, 8671 T. Mooney (M.M.), 9164 J. Macdonald, 515041 W. E. Birkett, 30381 K. L. Jones, 328014 J. Wright, 9788 P. E. Batten, 536144 F. A. Smeed (M.M.), 30944 J. Kerr, 26657 T. Richardson, 30880 A. Cheal, 30804 J. Scott, 31323 W. Wright, 30682 T. C. Cooper, 419147 W. Hitchcock, 551019 T. H. Bailey, 538212 R. Capell (M.M), 47403 A. Flear (M.M.), 30771 R. Garland, 31807 G. W. Pollard, 337186 B. J. Smith, 538285 H.

Symons (M.M.), 30753 C. H. Tanner, 533032 R. C. Brischlayer, 475123 C. R. Chamberlin, 354160 C. O. Connor, 441163 L. C. Fehrenbach, 527144 S. Hands, 40064 B. Rowley, 533065 F. Sharp, 493261 A. Upton. 350197 G. A. Walton (D.C.M.). 32045 T. Aitken, 32052 J. W. Bacon 32028 W. J. Bayliss (M.M.), 34932 W. H. Clifft, 538219 J. Coxhill, 31224 E. Dadge, 21223 W. C. Davis (M.M.), 31760 C. P. Dunscombe. 39741 J. Gallimore (D.C.M.), 32220 W. N. Haseldine (M.M.), 31622 E. C. F. Humphrey, 533062 W. J. Ralph, 512166 J. E. Wickens, 536150 G. C. Battson, 421168 W. Connolly, 32750 F. S. Davies, 341263 O. Dolan (M.M.), 536358 A. J. Newquist, 36282 F. Ralph, 461029 A. Reed, 341362 W. Shadwell, 32509 R. G. Wardrop (D.C.M., M.M.), 32702 A. Appleby, 32707 A. E. Brown. 32306 J. Enright, 36182 P. Hughes, 477148 R. Jack, 26648 C. Piercy, 477346 G. J. Prior, 32989 H. V. Turton, 318114 J. C. Borland, 32276 T. Boyd (M.M.), 34006 A. T. Bradford, 545055 W. T. Carter, 34041 E. Ellidge, 32602 T. T. Fawley, 33554 G. M. Gilbert, 33925 A. C. Imrie, 32343 S. Kay, 32463 M. Sanders, 34230 R. Smith, 36363 C. E. Ward, 33644 W. Blackmore, 33907 H. J. M. Chilton, 33527 E. W. Cooke, 40231 W. Tottle, 32705 W. Alford, 33663 A. E. Collard, 508215 J. Jessett, 32949 J. R. Marvin, 40350 W. Murray, 33376 W. Trigger, 40001 A. W. Allen, 25716 T. Hardisty, 533135 P. M. Stallard, 315079 A. Craig, 337258 E. J. Gibson, 34771 H. Howe, 39453 R. Ogle. 315084 W. Stevenson, 512256 J. F. Golding, 337280 B. D. Lloyd, 34317 C. McCarthy, 33958, J. McNab, 457286 N. H. Mitchell, 40368 J. A. Mincher, 40369 W. Morris, 34599 T. G. Riseley, 37353 B. J. Hodges, 37184 A. Partridge, 37190 M. H. Powell, 35559 R. G. Tilt, 33892 G. Waddilove, 36082 R. E. Owen, 35423 T. Cheadle, 33747 G. S. Blow (M.M.), 35752 G. Burditt, 54345 C. C. Burns, 339201 S. Goodman, 320187 J. A. McMurtrie, 34466 C. E. Spence, 477328 H. Wright, 36570 H. J. Biven, 311003 J. Chalmers, 36406 J. W. Gregory, 416050 W. S. Schofield, 37761 G. W. Toplis, 35943 H. C. Watson, 35715 C. R. Baker, 35359 T. Morrin, 388194 W. Calvert, 35293 A. Wood, 38857 J. Mason, 35154 S. Ogden, 390218 R. Atkinson, 36792 G. W. Barrett, 38820 F. Kay, 38821 V. J. Kennard, 37945 H. Norman, 39156 C. P. Wilkinson, 527086 E. C. Nash, 39308 W. M. Allison, 527093 W. E. Ostler, 37507 W. Elliott, 39747 S. Hogg, 39407 C. H. Brown, 37322 L. Oassidy, 40888 G. E. Wrightson, 527119 H. S. Barnett, 36686 T. Walker, 26997 D. W. Aubrey, 27024 A. Lewis, 27039 J. Williams, 37577 J. Payne, 38666 E. Hickling (M.M.), 45987 W. O'Connell, 339326 F. Patton, 545086 H. Brown, 38577 E. W. Drury, 39543 G. A. Kings. 510285 H. C. Smith, 38484 A. G. Webber, 38562 W. C. Clinch, 39340 J. R. Dixon, 423143 A. Greenwood, 41896 H. B. Hollyer, 38270 S. Tucker, 37473 W. H. Nixon, 38754 W. G. Gibson, 37849 D. Hall, 545098 F. B. Loughlin, 38370 S. Tilley, 41527 F. Dutton (M.M.), 421181 F. Sayfritz, 41525 R. H. V. Dixon, 40720 F. Martin, 42450 E. Hawksworth, 416057 J. Fawcett, 401160 G. D. Summerscales (M.M.), 40202 J. Bardsley, 527172 R. W. D. Beckett, 416067 A. S. Clarke, 45739 W. Dollar, 40180 T. Kane, 344055 T. Swindlehurst, 330032 G. Hodge, 43568 M. Wheelhouse, 324056 A. Dawson, 41666 F. Hartnell, 44877 H. Slee, 495211 J. T. Hadlow (M.M.), 41676 I. Jacob, 416074 W. Robinson, 41772 P. Rowell, 45929 A. Walker, 40197 W. Mills, 42914 W. J. Bunting, 40789 D. Davies, 41428 W. A. Hover, 393056 W. G. Ridley, 545138 T. F. C. Hughes, 43674 D. Munro, 44623 W. D. Campbell, 473257 F. D. Fox, 546257 W. L. Willcocks, 423051 H. W. Bricsoe, 43611 H. Greenhalgh, 43127 A. Hope, 41962 A. Melson 43160 J. Overton, 43995 T. L. Vipond, 43722 R. F. Scott, 368136 T. Williams, 27727 F. Willliamson, 43194 W. H Wood, 45586 W. A. Fletcher, 44367 R. Jones, 42692 W. Miller, 45513 A. R. Ansell, 43931 T. Hegarty (M.M.), 43445 H. Emberton, 27774 G. Carr, 44285, J. E. Leach, 44299 R. W. Passey, 43584 P. Swift, 44288 F. J. Jones, 44281 H. Lavender, 44295 E. Pryer, 27653 W. Cope, 45407 A. C. Hamilton, 45281 G. Rodger, 45298 D. W. Venters, 480011 A. A. Dant, 46435 H. S. Morgan, 46035 G. Coulson, 500100 C. G. Earl, 45127 R. A. Dampier, 54071 F. W. Greenaway, 46188 G. C. Hollier, 45289 L. O. Walford (M.M.), 366175 J. Salmon, 46555 J. Gray, 481082 S. C. Owen, 339388 W. H. Kendrick, 527244 W. A. Ellis, 301308 J. Aitken (M.M.), 27954 T. Kerswill, 47075 R. Hedley, 392042 W. W. Young, 417381 J. Conlon, 46965 E. J. Crothers, 47134 J. Burrell, 538567 E. J. Jones, 28350 J. W. Jowitt, 538330 F. J. Wagnall, 546265 S. H. Cracknell, 46905 F. Maxfield, 46916 F. Roberts, 545184 D. S. Noble, 382016 J. A. Milner, 47160 H. Clarke, 534337 H. J. Parrett, 515065 C. Bradford, 343058 J. W. Pattinson, 545211 W. Moreland, 461455 P. J. Aslatt (M.M.), 350318 H. Wallwork, 545221 S. S. Proud, 515068 J. W. Cummins, 459351 W. B. Goodenough, 515070 W. W. Woodcock, 328031 J. Leitch, 386332 R. Cook, 419316 S. W. Harbot, 527228 A. J. Wheeler, 545279 E. O. Stannard, 448004 A. Deaney, 47732 W. Hogg, 461484 H. Blakeley (M.M.), 441159 E. W. Harrison, 527253 W. R. Jackson, 47633 G. Wright, 410067 A. Coward, 47762 J. G. Dobbin, 545310 T. Jones, 545303 H. Smith, 527276 R. B. Hobson, 388294 M. Strong, 48428 T. Owen, 52012 T. W. Davenport, 53724 W. Ross, 48462 F. A. Tarling, 49125 J. T. Moran, 52025 A. Redhead, 49502 E. Robison, 49454 H. T. Green, 53682 T. Pattenden, 50057 B. Harrison, 49556 W. E. Bower, 54162 J. R. Axten, 50011 A. R. Beacon, 50008 F. W. Burrows, 50048 S. Hart, 49892 W. Kirwin, 49983 H. Bottomley, 54221 W. Forbes, 50615 T. Manifold, 29139 W. D. Jones, (D.C.M.), 513251 H. E. Rayson, 52660 L. Gibson, 51589 D. Cameron, 50222 F. Alden, 50949 T. Callaghan, 51650 J. W. Phillips, 341484 A. Brooks, 54163 R. Cowe, 51671 H. J. Rowlands. 51755 D. C. Watt, 51778 E. A. Wayman, 51382 S. Clinch, 51466 J. Hodkinson, 51843 L. Gaulton, 53592 S. Cairns. 51916 J. Little, 52066 A. E. Tipping, 51898 H. W. Joslin, 51797 C. Dex, 51888 E. J. Jones, 52884 F. R. Spinks, 52260 G. Fraser, 52895 A. Schofield, 52189 W. Bowen, 52886 F. R. Searley, 52229 T. G. Dingley, 52371 A. Leese, 541052 S. A. Maycock, 52390 L. Morris, 500247 F. Ovenden, 53573 S. S. Arden, 53233 J. Byers, 52197 J. Carrington, 52905 A. J. Stallard, 52930 F. Twells, 479007 F. T. Garwood, 495422 L. G. Craft

(M.M.), 53014 A. J. Weller, 55141 A. Brennan, 55165 M. L. Hailing, 388449 W. J Eales, 48528 T. McCann, 55363 D. McL. V. Turnbull, 370009 E. Wilson, 528199 H. Gresswell, 29533 F. J. H. Martin, 29537 W. R. Richards, 55817 P. Stephenson, 441060 F. E. Bayliss, 56001 W. H. P. Busson, 56064 G. W. Jones, 56214 J. Noble, 48538 R. H. Jones, 56767 A. Archibald, 56858 M. Sheedy, 56850 H. Bradley, 56956 E. Johnson, 56951 H. Pickering, 57530 J. A. Corkill, 545426 T. W. G. Farrant, 545437 A. M. Hill, 57338 J. Sill, 57670 H. O. Le Patourel, 71288 J Wicks, 54839 M. McManus, 423093 F. Bodkin, 527478 D. Harvey, 527480 A. H. Payne, 395004 T. W. Tindale, 515079 W. G. Clark, 495468 C. Herbert, 545530 W. D. H. Smith, 426116 A. E. Turner, 527539 J. W. Rawdon, 527540 T. W. Rothwell, 527543 J. W. Whittock, 527547 H. W. King, 545536 W. J. Povey, 88620 G. R. Gough, 24598 E. W. Muffitt, 24340 G. F. Stainthorpe, 527579 E. A. Hunting, 58010 W. Fairweather, 540094 W. Nelson, 392117 A. Douglas, 58006 H. Edge, 57981 J. G. Reid, 58097 A. J. Tait (M.M.), 371016 N. Smith, 58070 J. Guiney, 403528 F. Watkinson (M. M.), 357177 V. Fryer, 493628 H. J. Sanders (M.M.), 426161 H. Briggs, 316293 W. S. Donald (D.C.M.), 545613 C. Hazel, 497482 T. H. Hill, 54753 R. MacKay (M.M.), 481129 S. C. Squires, 58470 C. F. Taylor (M.M.), 58752 J. McTurk (M.M.), 58662 H. W. Brocket, 357222 G. M. Groves, 527620 S. Keene, 545637 W. J. Gravestock, 545869 A. P. Ling, 527680 A. Mason, 59013 C. H. Harker, 59465 H. H. Lewis, 59124 H. Thomas, 59163 F. J. Eavers, 439497 T. E. Slade, 59353 R. T. Sugar, 79788 D. McCallum, 437411 R. J. Oakes, 59424 F. M. Jeffery, 59764 C. Grice, 59579 F. C. Highfield, 59583 A. R. Savage, 59705 C. J. Conquest, 435438 H. L. Hazleton, 60040 J. D. Perritt, 442252 J. E. Bradshaw, 60139 J. I. Corlett, 60140 R. H. Corlett, 60110 F. W. C. Gregory, 59956 H. Jones, 308095 W. H. Thom, 527722 R. J. Smithson, 527700 C. C. Summers, 60295 S. Kerry, 441158 H. Brook, 60289 S. Hayward, 352432 T. Hoyle, 545684 W. F. Mason, 527740 H. S. Smith, 60807 C. W. Hillarby, 514066 H. E. Stacey, 61004 J. Rowan, 61051 H. J. Harris (M.M.), 61087 H. Boot, 61017 W. Kay, 324078 H. J. Alexander, 433025 J. H. Baker (M.M.), 481209 A. J. Carter, 61607 J. H. Choice, 545759 A. S. Danbury, 61731 G. T. Gabe, 444126 J. Mansfield, 61794 T. Taylor, 479069 A. S. Dobson, 527767 W. P. Osborne, 62166 W. Lattin, 65192 M. Harvie, 61261 G. E. Lawton, 62284 W. B. Randall, 62355 J. Mann, 459486 P. H. Wadge, 527797 C. H. Hobbs, 62469 W. Walford, 66207 A. E. Cutler, 65342 H. J. Heselton, 303360 J. Hume, 62776 J. Shaw, 62873 C. E. Binion (M.M.), 62937 R. Duck, 63042 J. Elliott, 63131 H. H. Birchall, 63034 H. Bradshaw, 63035 I. Parker, 63338 C. G. D. Hawkes, 500191 S. Pinkney, 541170 L. R. Bingham, 393252 T. Stead, 63623 W. D. Vaughan, 519016 L. Whitehead, 67264 H. Ellison, 64685 J. Leslie, 64735 C. E. Leeson, 326088 J. A. Taylor, 66508 J. McGregor, 546116 H. Watkins, 66570 G. S. Fletcher, 64821 G. Hunter, 102211 F. Hulme, 68875 H. Storry (M.M.), 68999 E. Ainscow, 354508 J. H. Seddon, 66630 J. E. V. Crofts, 64911 A. T. Hope, 356007 L. Baldwin, 69360 H. Kay, 65980 C. A. Hemming, 72129 A. Whybrew, 66885 G. W. Bryant, 69935 J. A. Bance, 70061 P. Griffiths, 72205 G. H. Liner, 72182 W. Parker, 72169 W C. Daniels (M.M.), 70677 P. Jackson, 72381 W. Gammage, 72315 S. Addington, 72337 A. H. Loasby, 546085 A. A. Godman, 71693 J. W. Haigh, 73635 J. E. Underwood, 372363 W. J. Woodfield, 75636 J. W. Bramhill (M.M.), 77391 J. S. Christian, 73745 A. W. Grattidge, 74606 L. S. Jeffs, 508504 L. C. Webb, 73784 C. E. Williamson, 73833 F. Caudwell, 73999 F. P. Harrison, 77890 R. M. Jones, 73924 H. Brookhouse, 546016 C. Chapman, 76850 A. E. Day, 103243 J. J. Rafter, 76153 T. P. Thomas, 79257 A. E. Aston, 77079 H. Holt, 77174 J. A. Wall, 81059 M. C. Wilson, 546179 A. Baxter, 79108 T. E. Morgan, 528056 C. D. Bright, 78433 H. E. Strachan, 80946 S. T. Channer, 322061 H. F. Thompson, 481296 B. L. Chapman, 83805 E. E. Back, 79112 A. E. Holmes, 79376 P. A. Skinner, 82195 W. Ashworth, 79381 J. W. Cuedren, 493728 R. Seymour, 493717 G. G. Galpin, 79371 S. A. Best, 79388 L. Chidley, 79741 H. Harrison, 79810 R. H. Gould, 412031 F. F. Fulker, 83741 J. P. Faulkner, 528233 H. W. Gill, 83779 W. H. Jones, 79498 T. W. Winstanley, 83806 R. G. Roberts, 528239 L. W. Day, 79566 P. D. Housley, 428023 D. Hurst, 83810 A. B. Abel, 79808 E. G. Bate, 83695 A. O. Griffiths, 79571 T. Jacques, 83702 J. Jenkins, 83710 E. Miles, 83711 D. Morgan, 79797 H. T. Cogar, 105818 J. Bancroft, 79764 F. W. Dabbs, 79767 W. E. Ward, 79769 C. Whomersley, 79765 B. Wigmore, 83715 E. C. Phillips, 528123 E. Lamb, 81753 W. R. Morris, 81947 R. B. Wilkie, 83760 G. C. Crummack, 83815 J. M. B. King, 84825 M. Allsopp, 84122 J. W. Bowmer, 543166 W. H. F. Stump, 99697 J. B. Bower, 316474 J. L. Garland.

Dated March 30, 1918.—Privates: 508611 J. Turner, 84679 W. Burke, 86198 J. W. Gardner.

These promotions are subject to the conditions laid down in paragraph 35, Standing Orders for the Royal Army Medical Corps, 1914.

Temporary Promotions.

The following temporary promotions to complete War Establishment will take effect from the date specified:—

To be Temporary Serjeant-Majors.

Dated March 16, 1918.—Quartermaster-Serjeants: 322107 D. M. Kerr, 90466 G. R. Smith, 90543 G. J. Pittman, 459009 R. Old, 457003 A. E. Sharland, 28548 H. Moore, 32014 H. W. Wilkins, 315003 A. P. Anderson, 93660 W. Paul, 32268 T. W. Allcard, 16053 S. M. Hawthorne, 18415 A. Bell, 538584 J. Ott, 11807 J. Levey, 14770 A. Buckner, 13544 E. J. Barnes, 17633 R. Sproule (M.M.), 536478 H. E. Pierce, 15843 W. Stokes, 16205 T. Gregson, 16569 E. Attfield, 14326 W. P. S. Morman, 18453 F. A. Philbrook, 17748 C. H. Dissent, 18216 R. G. Leggett (D.C.M.), 18976 E. G. Robinson, 18337 C. Leaker, 417461 F. J. Steele, 18432 G. F. Pearce.

18445 J. E. Crawley, 17928 W. S. Toye, 18385 F. W. Coupland, 18645 C. E. Rouse, 12461 P. F. Cook, 15288 W. C. Prince (M.M.), 15591 J. Harris, 15813 A. V. Heggie, 18948 E. Moore, 15671 R. W. Cole, 15483 E. Sharp, 17057 M. Ward, 11736 J. D. Keeble, 18969 E. Gray, 13032 T. Kerr, 90488 E. Savage, 12989 E. G. W. Barnes, 16678 J. E. March, 11614 W. H. Howard, 18222 A. Dady, 89700 E. J. Batchelor, 14761 W. Robertson, 12819 W. H. Riches, 318344 J. Macfarlane, 508250 W. J. Perch, 17573 C. Harlen, 13035 G. V. Chandler, 17358 C. Ennor, 12709 H. J. Ford, 26999 I. H. Caple, 17091 J. Moore, 19320 H. A. Ritchie (M.M.), 103 G. P. Steer, 475107 W. F. A. Way, 465010 E. Pillar, 12065 A. A. E. McKnight.

These temporary promotions are subject to the conditions laid down in paragraph 35 Standing Orders for the Royal Army Medical Corps, 1914.

ADJUSTMENT OF RANK.

The following Acting Serjeant-Majors are promoted to the rank of Temporary Serjeant-Major from the dates specified :—

To be Temporary Serjeant-Majors.

Dated May 2, 1917.—Acting Serjeant-Majors : 517001 W. H. Ford, 515001 W. J. Cabburn, 467001 H. B. Dotterill, 393001 J. Tunnah, 410193 W. J. Hemphill, 308001 G. A. Walker, 393003 T. K. Megoran, 426004 E. T. Earp, 324001 A. J. Edwards, 372001, W. T. Worth, 446023 H. Andrews, 357001 W. Ball, 465002 J. D. Griffiths, 465009 C. H. Gill, 472005 T. W. Smith, 493320 W. W. Weeden, 417013 R. H. Farr, 410194 R. Whitworth, 423001 S. C. Greenwood, 357030 L. J. Riley, 459002 T. W. Parsons, 316023 D. Ritchie, 390001 R. Edwards, 457001 A. E. R. House, 341411 F. C. Scrutton, 541048 C. E. Smith, 408032 A. R. Reilly, 339006 D. G. Martin, 305002 R Duncan, 343069 J. Leighton, 320001 T. M. Weldon, 481381 I. O. Race, 424009 J. T. Coles, 370033 A. W. Marks, 344002 W. E. S. Waring, 459049 R. A. Elliott, 461337 T. B. Whitfield, 408050 T. H. Brunton, 364003 W. C. Scott, 437006 H. C. Jackson, 457005 G. E. Callard, 408028 G. W. Steel, 320392 A. Reid, 400087 T. H. Armstrong, 495117 D. G. Mather, 366193 W. J. F. Phelps, 480002 R. W. Allpress, 508059 F. A. Smith, 459009 A. E. Darley, 308002 A. L. Gauld, 465003 J. Ball, 463001 J. J. Baker, 337006 R. E. Williams, 419001 A. W. Thorne, 339015 D. J. Dakin, 481004 C. Constable, 339005 A. Viddler, 533001 G. A. Judd, 372018 J. Morgan, 354015 E. W. Langford, 350004 C. Bonehill, 34099 J. Parr, 426002 T. A. Towers, 300004 J. Sinclair, 499002 T. G. A. Sheppard, 519031 J. J. Bird, 326005 H. A. Ramsay, 475007 E. J. Spinks, 341003 J. Wilson, 356001 T. E. Carter, 416022 J. J. Abbott, 337023 J. Dalton, 461170 S. C. Pocock, 372004 S. C. Turner, 439018 J. Creese, 390017 H. N. Browne, 417055 A. King, 435001 J. Bode, 473508 C. W. Baker, 493006 C. Abnett, 536001 H. E. Bevans, 322001 E. G. Gray, 492001 W. H. Ingamells, 497003 H. G. Freeman, 328003 A. Irvine, 510007 A. W. Burton, 408002 C. Morrell, 326012 J. Stewart, 481003 B. G. Clarke, 311022 R. Clarke, 343142 G. Wilkins, 433001 J. H. Blackwell, 444021 J. V. Loney, 423101 J. P. Flavill, 350002 W. Jarman, 339009 G. W. Isaacs, 446001 W. E. Dore, 473244 F. G. Elsden, 416026 G. S. Jackson, 307051 J. B. Calder, 388001 W. Parker, 368001 F. T. Rowe, 456004 F. S. Holmes, 403196 J. W. McCandlish, 318004 W. Millar, 541010 H. A. Walden, 442019 G. L. Stiles, 543005 F. S. Booth, 352199 F. Williams, 339010 B. Benson, 388018 J. Clough, 328018 J. D. Scrimgeour, 405318 C. H. Harrington, 401416 J. Kelly, 392007 W. Potts, 366011 T. Burnard, 514001 W. R. Gillett, 424056 J. C. Walker, 467067 W. R. Stoakes, 512196 H. E. Young, 407054 J. R. Greer, 444008 H. C. Pedrick, 543026 E. Strong, 515002 G. Cowie, 543001 A. A. Daw, 543001 C. A. Wingate, 426054 G. A. Ball, 442010 G. C. Corbett.

Dated May 16, 1917.—Acting Serjt.-Major : 473235 F. Edmonds.

Dated May 23, 1917.—Acting Serjt.-Major 435485 H. O. Wheeldon.

Dated May 24, 1917.—Acting Serjt.-Majors: 500001 W. Poole, 500002 W. C. Maidlow, 500006 R. H. Ballard.

Dated May 26, 1917.—Acting Serjt.-Major 303001 A. Mackray.

Dated June 1, 1917.—Acting Serjt.-Major 540055 F. H. Hankins.

Dated June 6, 1917.—Acting Serjt.-Major 519021 H. H. Bond.

Dated June 19, 1917.—Acting Serjt.-Major 538276 W. H. Scrutton.

Dated June 25, 1917.—Acting Serjt.-Major 512019 J. C. Caswell.

Dated June 26, 1917.—Acting Serjt.-Major 386014 P. T. Pickard.

Dated July 3, 1917.—Acting Serjt.-Major 538086 T. Burrows.

Dated July 5, 1917.—Acting Serjt -Major 536018 C. Gillard.

Dated July 6, 1917.—Acting Serjt.-Major 337283 F. Fowles.

Dated July 18, 1917.—Acting Serjt.-Major 421013 W. J. Bastone.

Dated July 19, 1917.—Acting Serjt.-Majors 510201 F. Hopkins, 341430 R. R. Parry.

Dated July 24, 1917.—Acting Serjt.-Major 434002 F. W. Nichols.

Dated July 28, 1917.—Acting Serjt.-Major 437009 G. Rutter.

Dated August 2, 1917.—Acting Serjt.-Major 354020 E. Roberts.

Dated August 6, 1917.—Acting Serjt.-Major 540037 F. B. Challis.

Dated August 13, 1917.—Acting Serjt.-Major 515028 C. F. Palmer.

Dated August 18, 1917.—Acting Serjt.-Major 508003 S. T. Love.

Dated August 23, 1917.—Acting Serjt.-Major 407011 B. E. Crossley.

Dated August 25, 1917.—Acting Serjt.-Major 301230 W. T. J. Davis.

Dated August 28, 1917.—Acting Serjt.-Major 477018 W. T. Holbrook.
Dated November 1, 1917. -Acting Serjt.-Major 403033 H. L. Moss.
Dated November 2, 1917.—Acting Serjt.-Major 352032 L. H. Robinson.
Dated November 18, 1917.—Acting Serjt.-Major 534233 H. Hubbard.

These temporary promotions have previously been published in Special Corps Orders issued from this Office, and are now published for general information.

ADVANCEMENT OF PRIVATES—CORPS PAY.

The following advancements in rate of Corps Pay will take effect from March 16, 1918.

To be Advanced to Third Rate (at 8d.).

As Orderlies.

22457 W. O. Dixon, 23196 S. H. Elliott, 24975 A. Brook, 104720 J. Wilson, 106691 G. E. Pates, 33160 A. F. Reynolds, 35546 P. J. Parriss, 43732 J. Smith, 50625 E. Nowell, 52190 D. Buchanan, 55134 D. T. Makinson, 55715 F. Dalby, 56557 J. Campbell, 58484 J. F. P. Ford, 58561 J. Marland, 59149 J. L. Pengelly, 69832 F. J. Pritchard, 75643 F. H. Grime, 78616 J. A. Wallett, 92142 F. E. Norman, 311057 E. G. Bell, 324040 W. Wilson, 341173 R. Sheilds, 341530 J. Duckworth, 350256 W. E. Morpeth, 401275 C. R. Gallant. 408148 T. Shannon, 434068 F. G. Birmingham, 442325 W. K. Winfield, 473187 D. L. Saberton, 514070 E. Campion, 515063 C. R. Roberts, 22474 H. W. Gillett, 23206 C. H. Gordon, 26499 J. E. Morris, 104275 M. Reid, 104802 C. S. Bassham, 32547 A. Chamberlain, 33524 J. E. Brown, 41796 J. Whetstone, 50758 J. Smith, 52414 J. McCann, 55373 T. Mannion, 55778 T. Kelly, 57666 S. Gill, 58488 A. E. Furniss, 58565 H. Owens, 59364 C. W. Unwin, 70137 H. Fortune, 77570 J. Waugh, 82347 W. Goode, 301110 J. Sheddon, 311074 W. Pratt, 324043 H. Dalgleish, 341313 T. Jameson, 844111 S. Keepe, 352156 V. Hinson, 407003 H. Miller, 426245 B. B. Lidster, 441036 A. Hunt, 444039 P. Dabinett, 514008 E. F. Parsons, 514072 W. C. Bruce, 515095 R. Reynolds, 23047 B. Rhodes, 24492 T. D. Dawson, 101303 E. Groves, 104586 J. McHoull, 105421 C. Roberts, 33035 C. Collett, 34360 T. Wainwright 43435 W. Dewhurst, 45280 E. W. Rolley, 50986 H. F. Goose, 53071 W. Moore, 55566 R. Bass, 56535 G. A. Poole, 658482 H. Glasby, 58838 I. Taylor, 58983 W. Fletcher, 63494 A. Wallace, 70311 A. Radcliffe, 78603 S. Howcroft, 92141 C. A. Foy, 301313 N. Kitson, 320159 J. C. Imrie, 341158 L. Webster, 341449 H. Gravener, 350120 E. Bibby, 354026 S. Watson, 408146 H. W. Pratt, 433053 E. Whitfield, 463073 W. J. Sutton, 514050 R. E. Brown, 515026 V. C. Egles, 517030 S. H. Banks.

As Clerks.

33322 T. E. Roberts, 45204 F. Broadbent, 63615 J. Lancaster, 68879 W. Russell, 75775 P. S. Smalley, 77842 W. Gibson, 79579 F. C. Bond, 81142 J. R. Morrell, 83290 W. G. Ratcliffe, 89994 J. R. Matthews, 8532 J. W. Wallis, 106455 C. P. Simpson, 341696 G. H. Watkins, 344164 S. Maxwell, 393293 C. E. Thirwell, 433113 B. W. Blasdale, 446132 W. F. Beesley, 508091 A. Lusby. 512516 F. W. Loveland, 515139 R. J. N. Tutt, 37347 H. Hall, 53044 E. G. Bailey, 65845 A. S. Mayers, 71929 A. Wright, 76450 F. W. Bramley, 79256 J. A. Wardle, 79649 P. Viner, 82120 C. F. Campbell, 87603 W. T. Stanley, 95084 F. C. Clarke, 100805 L. E. Swift, 337230 C. F. Dawson, 344148 R. Hemphill, 350540 E. Littlejohn, 393301 J. E. Ulliott, 437079 W. Smith, 493316 D. P. Gibbons, 510057 W. G. Waldron, 515101 H. C. Cox, 519044 M. Hamber, 41520 R. Clayton, 53580 L. C. Bryer, 68733 A. E. Sharp, 73976 F. W. Page, 76526 A. E. Richards, 79258 T. S. Ward, 80824 G. O. Graves, 83282 R. W. A. McDonald, 87700 I. Goodaire, 95141 L. Hudson, 104078 A. C. Summerfield, 337760 W. O'Hare, 344163 J. J. Brennen, 364151 E. D. Phelps, 410051 B. Talford, 446090 E. J. Beck, 497114 C. H. Yeabsley, 50325 P. J. Bales, 515112 F. Sedgley, 533106 S. E. Shore.

To be Advanced to the Fourth Rate (at 6d.).

As Orderlies.

30342 F. Dorey, 31039 G. Price, 31904 W. Parsons, 33702 A. Allam, 33854 T. Parker, 34439 F. Russell, 35224 V. Dower, 35781 J. Cahill, 36512 L. A. Bennett, 36568 W. L. Stone, 36592 G. E. Barlow, 38097 J. Pickston, 39983 J. T. D. Cook, 40941 S. Campbell, 41808 E. G. Bridges, 42464 T. S. Leigh, 43553 C. W. Thompson, 101421 W. Taylor, 9533 J. E. Maddock, 21055 H. Crowson, 21430 F. H. Stansfield, 21732 W. Holliday, 21912 H. Kerry, 311086 R. J. Wedderspoon, 316434 W. Henderson, 324026 A. Stanley, 324092 P. Hainey, 337187 L. Cox, 337718 H. Price, 341251 F. Cox, 344089 J. H. Carter, 344145 T. Jones, 30872 H. King, 31832 A. Moate, 32535 S. Bretherton, 32715 J. Bucknall, 34191 J. MacDonald, 34463 R. Stephens, 35431 A. Dregnan, 35821 E. Fisher, 36538 A. Bower, 36571 T. Bourne, 39649 J. McCabe, 40162 J. Collier, 42296 J. J. Taylor, 42469 D. V. Lewis, 42644 A. Jones, 21998 J. D. Parkinson, 9641 O. Edwards, 21196 J. Bateman, 21523 W. Lawton, 21811 S. Brown, 301190 J. Buchan, 311036 W. Marlow, 316251 W. Fox, 316442 R. B. Kinloch, 324076 D. B. Doughty, 326044 P. F. C. Peters, 337540 J. H. Costain, 339094 G. Pennington, 341351 W. Parr, 344126 J. Kenyon, 344140 W. Whalley, 30990 R. D. Bridgeman, 31833 F. J. Rapley, 32626 H. C. Lever, 32748 S. Devlin, 34993 H. Lazenby, 35579 J. W. Sharples, 36506 W. Hyde, 36549 W. A. Madden, 36965 W. H. Hems, 39770 D. E. Harries, 41150 J. Armstrong, 42436 S. Devine, 42923 J. A. Chesworth, 43836 A.

Crook, 9667 A. O. Davies, 21246 A. H. Seager, 21650 W. C. Riding, 21894 J. Boffey, 305125 D. S. Doig, 311047 T. D. Smith, 316418 M. McKenzie, 316459 T. Pritchard, 324083 J. Duncan, 337183 G. A. Brown, 337636 J. A. Hutt, 339144 S. Hancock, 341544 W. H. Day, 344127 J. Scott, 344141 P. H. Burrows, 344156 A. E. Wright, 344171 E. G Barber.

As Clerks.

21277 E. Bantock, 23148 B. C. Watson, 101890 N. Crabtree, 104091 J. W. Killen, 106393 D. H. Walker, 35636 G. Carter, 42377 L. C. Piper, 56145 L. Quin, 63377 A. W. Clare, 65513 H. Capon, 70050 F. Fish, 71589 H. Richards, 75539 C. W. Noble, 76419 E. D. Rees, 79216 W. J. Jones, 88123 W. Chalmers, 90368 H. G. Watkins, 92580 H. Wilson, 93900 R. Marshall, 97849 E. C. N. Batten, 114041 A. Gordon, 115346 W. Moss, 301544 J. McL. Scott, 318357 C. Mabbett, 344165 S. C. Goldstone, 344195 S. W. Thomas, 350316 H. Miller, 450453 J. McIver, 354436 J. Spalding, 366413 A. E. Brain, 390262 G. W. Readymartcher, 393326 W. M. Maughan, 401418 L. King, 405443 L. V. Harrison, 410043 W. B. Hughes, 426101 H. Jackson, 442365 T. Davy, 859385 C. G. Bowditch, 473351 C. D. Selsby, 497514 T. E. Henderson, 512189 J. Burbidge, 533030 H. J. Smith, 536475 P. E. Munro, 21864 N. F. Perrin, 103350 T. Hoyle, 105040 H. Waterworth, 32080 R. Fox, 38762 J. Hayes, 52514 A. L. Johns, 57345 T. P. O'Shea, 64259 J. H. Railton, 69380 R. S. Burgess, 70110 S. Taylor, 72281 F. J. Evans, 75912 A. E. Oliver, 76698 H. Appleby, 80921 L. Nunn, 88654 N. W. Smith, 91153 J. E. Vick, 92737 W. R. M. Dennis, 97364 H. J. Williams, 113891 F. Southgate, 114933 A. E. Russell, 119410 W. Prim, 303428 W. Hay, 318538 T. Burleigh, 344168 L. Stott, 344197 W. W. Vann, 350168 J. B. Marsden, 350351 S. Williams, 354022 G. Snowden, 368369 F. S. Richards, 393344 J. R. Stoddart, 401356 F. Reece, 403087 C. E. Crook, 405503 C. R. Pacy, 410097 C. F. Walkland, 433104 J. A. Ollis, 442417 L. Brooks, 467132 L. P. Humby, 481089 F. H. G. Webb, 497597 W. Aspden, 512217 P. Sperrin, 534580 S. Giddings, 536497 A. G. Clarkson, 350182 R. Johnson, 350376 J. Phizacklea, 22447 R. Conoley, 101785 J. Higginson, 103804 C. W. Fletcher, 106353 J. Scotter, 33008 H. L. Bryan, 40236 L. Totterdell, 53278 H. E. Sanson, 57946 E. H. Smith, 64976 T. W. Owbridge, 69627 A. Lancashire, 70218 W. G. Young, 75268 L. Long, 76102 G. G. Seconde, 76895 H. Sullock, 88066 G. P. Ransome, 89243 J. A. Melrose, 92326 E. G. Rushrook, 93238 W. Holden, 97384 W. Pugh, 113905 G. Pearce, 114987 E. O. Pike, 121332 W. Robinson, 318316 R. J. Mackie, 339619 F. Ball, 344191 H. T. Parker, 344207 F. P. Ellis, 354435 T. A. Bannister, 366339 C. H. Wheeler, 388581 T. W. Scott, 393317 W. P. Ferguson, 401297 F. H. Heckingbottom, 401363 A. J. Naylor, 403471 J. A. Lord, 408089 H. A. Joplin, 421208 A. L. Lamb, 435439 F. Bayman, 446042 F. Hurst, 467148 J. G. Theasby, 495396 A. E. Diwell, 500264 F. S. Paine, 536177 W. G. Thompson, 538491 H. Bubbers, 541207 G. Rapley, 541201 H. W. Stanbridge.

As Cooks.

33258 W. D. Malcolm, 92787 J. T. Palmer, 352426 J. Spencer, 390447 W. Liversedge, 58009 H. Rudd, 103407 W. Colvin, 375054 W. J. Palmer, 459429 T. H. Salter, 92736 G. A. Day, 103634 H. Gordon, 390250 F. C. Lees, 465068 C. H. Hoskins, 499147 W. Taylor, 515036 R. W. Dawkins.

These advancements are subject to the conditions laid down in paragraph 35 Standing Orders for the R.A.M.C., 1914.

CANCELLATIONS.—CORPS ORDERS.

Advancement of Privates.—Corps Pay.

The advancement to the 3rd rate of corps pay of 52889 Pte. P. F. Gibbs, dated September 14, 1917, is hereby cancelled.

The advancement to the 4th rate of corps pay of 25850 Pte. A. B. Balchin, 32491 Pte. A. J. Taulbut, and 104030 Pte. W. H. Lord, dated January 24, 1918, is hereby cancelled.

DISTINGUISHED CONDUCT MEDALS.

His Majesty the King has been pleased to award the Distinguished Conduct Medal to the undermentioned for gallantry and distinguished service in the Field :—

(Supplement to the *London Gazette*, dated February 18, 1918.)

39741 Pte. J. Gallimore.

For conspicuous gallantry and devotion to duty. He showed great courage and self-sacrifice in attending to the wounded under heavy fire.

(Supplement to the *London Gazette*, dated March, 4, 1918.)

40508 Serjt. T. Ashmore, M.M.

For conspicuous gallantry and devotion to duty in charge of bearers. He led three parties of stretcher-bearers through heavy shell fire to clear R.A.P.s. He was wounded in the arm while bringing in a wounded man, and later on gassed, but continued to perform his duties until ordered to withdraw.

27821 Serjt. A. Blandford, M.M.

For conspicuous gallantry and devotion to duty during a heavy bombardment of gas and H.E. shells. He led a party of stretcher-bearers to the rescue of some gunners whose dug-outs had been blown in. At great personal risk they succeeded in digging them out and rescued three alive. It was due to his initiative, courage and energy that three lives were saved.

37128 Cpl. (Acting Serjt.) A. C. Cardy, M.M.

For conspicuous gallantry and devotion to duty while in charge of forward bearers. He superintended the evacuation of the wounded under continuous heavy fire and over almost impassable ground, remaining at his work until all the wounded were cleared, although wounded himself.

1998 Serjt. E. Patrick, M.M.

For conspicuous gallantry and devotion to duty in charge of a relief post for three days. He worked without ceasing, collecting and evacuating wounded under heavy shell fire, and so saved the lives of many men.

32509 Pte. (Acting Serjt.) R. G. Wardrop, M.M.

For conspicuous gallantry and devotion to duty when in charge of a bearer post. He got all the wounded away from his post under intense shell fire, and in spite of casualties among the bearers, working in the open with utter disregard of danger. He set a magnificent example of courage and untiring energy.

39168 Staff-Serjt. O. Williams.

For conspicuous gallantry and devotion to duty when a dug-out at a forward post was blown in during an action. He was the first on the spot, assisting to extricate the wounded under very heavy shell fire. When both the officers at the post were wounded he took command, controlling the evacuation of the wounded with great skill. His coolness and disregard of self were a stirring example.

4977 Pte. (Acting Serjt.) W. Wilson.

For conspicuous gallantry and devotion to duty. When casualties were caused at a position which was subjected to a heavy bombardment he at once organized a party of bearers, hastened to the spot, and succeeded in rescuing a wounded officer under heavy fire. Later, he rendered most valuable service in helping to rescue two men who had been buried in a dug-out. On many occasions he displayed great courage and coolness of a high order.

(Supplement to the *London Gazette*, dated March 28, 1918.)

23139 Pte. W. D. Jones.

For conspicuous gallantry and devotion to duty. He was one of a party of eight bearers attached to a battalion which at the time was being subjected to heavy shell fire. Though the other bearers had separated and sought shelter, he went from cellar to cellar looking for wounded and reporting their location to the Medical Officer. Later, on three occasions during the intense bombardment, he went out and brought in a wounded case on his back. Throughout the whole period he displayed exceptional courage, and as a result of his initiative, untiring efforts and splendid example, a large number of wounded were collected and rapidly evacuated.

20784 Pt. W. Kelsall.

For conspicuous gallantry and devotion to duty. Owing to there being a heavy barrage on the road to the advanced dressing station, all communications with the Motor Ambulance unit were cut off. He volunteered to proceed to the advanced dressing station and inquire what assistance was required. Having returned through the barrage, he personally conducted seven ambulances along this road, thus enabling twenty-eight stretcher cases to be evacuated. During the following twenty-four hours he twice returned to the advanced dressing station, and on a later occasion, when proceeding along this road, was wounded. As a result of his zeal, devotion to duty, and complete disregard for personal safety, a large number of wounded were rapidly evacuated.

100629 Pte. W. Young.

For conspicuous gallantry and devotion to duty. As medical orderly attached to a tank battalion, though blown up and wounded he performed his duties with the utmost coolness, attending to infantry wounded cases as well as those of his own battalion. He accomplished fine work in helping to extinguish the burning clothing of two men. Throughout he displayed the greatest devotion to duty and an entire disregard of personal safety.

12743 Qmr.-Serjt. (Temp. Serjt.-Major), T. R. Wilson.

For conspicuous gallantry and devotion to duty. When the enemy attacked he organized the clearing of a dressing station and saved a large number of wounded from falling into the enemy's hands. While the position was subjected to heavy shell and machine-gun fire and the enemy were approaching from several directions, he remained at his post, searching for and removing the wounded. He was partly responsible for getting an ambulance train full of wounded away, and helped to save the personnel and transport of the dressing station. He showed magnificent coolness and initiative in a critical situation.

With reference to the award of Distinguished Conduct Medals, dated March 7, 1918, the following are the acts of gallantry for which the decorations have been awarded.

(Supplement to the *London Gazette*, dated April 17, 1918).

25789 Serjt. H. Bottomley.
For conspicuous gallantry and devotion to duty. His sympathetic care and treatment of the sick and wounded, and his magnificent work in the field on many occasions when in charge of stretcher-bearers collecting wounded, often under heavy fire, have been of inestimable value.

6146 Pte. (Acting Serjt.) J. Hughes.
For conspicuous gallantry and devotion to duty as senior N.C.O. bearer since the commencement of the campaign. His great courage and powers of leadership and his brilliant work have been of the very greatest value throughout.

18576 Qmr.-Serjt. (Acting Serjt.-Major) W. Lamkin.
For conspicuous gallantry and devotion to duty as senior N.C.O. of a bearer division and of advanced dressing stations. The courage, initiative, and enthusiasm which he has always displayed in his work, and his magnificent example of cheerfulness in danger, have been of the utmost value throughout the campaign.

18216 Qmr.-Serjt. (Acting Serjt.-Major) R. G. Leggett.
For conspicuous gallantry and devotion to duty. His courage and energy were admirable, and his splendid example set a high standard of efficiency to all with him.

35078 Staff-Serjt. (Acting Serjt.-Major) T. McNicol.
For conspicuous gallantry and devotion to duty on many occasions during operations. He always exhibited the greatest courage and coolness in supervising the evacuation of the wounded, frequently under heavy shell fire, and his splendid example was an inspiration to his men.

20788 Cpl. (Acting-Serjt.) J. Moran.
For conspicuous gallantry and devotion to duty on many occasions. Owing to his courage and coolness under shell fire, the wounded were always quickly removed out of danger, and his magnificent example greatly inspired the bearers working under him.

54483 Serjt. W. Price.
For conspicuous gallantry and devotion to duty during operations. He has been in charge of stretcher-bearers for a long period, and always displayed great courage and initiative in collecting and evacuating the wounded. He set a magnificent example to all with him.

Military Medals.

His Majesty the King has been graciously pleased to confer the Military Medal for Bravery in the Field to the undermentioned Warrant Officers, Non-commissioned Officers and Men:—

(Supplement to the *London Gazette*, dated February 23, 1918.)

45514 Pte. A. C. Amey.
33703 Pte. C. J. Ashman.
35408 Pte. A. Bagshaw.
40729 Pte. (Acting Cpl.) W. Baseley.
7594 Pte. W. H. Beake.
49069 Pte. H. Bland.
74626 Pte. W. Bridgford.
61603 Pte. J. Cooper.
35791 Cpl. A. Davies.
58054 Pte. E. M. Davies.
4604 Pte. B. Dempster.
31842 Pte. C. Farrell.
7265 Pte. J. C. Finigan.
20294 Pte. W. Fish.
44672 Pte. M. Gaffney.
30808 Pte. J. Grierson.
37016 Pte. A. Hall.
64877 Pte. A. Hamilton.
66607 Pte. F. Hamlin.
56484 Pte. (Acting Lance-Cpl.) J. Hancock.
52295 Serjt. H. E. Hardy.
45772 Pte. J. C. Harradine.
103741 Pte. H. Haslam.
18344 Pte. (Acting Serjt.) A. Hayden.
80445 Pte. W. H. Heath.
50426 Pte. G. Henson.
56668 Pte. J. Hughes.
8980 Pte. W. Kelly.
106059 Pte. F. R. Kennerley.
36049 Serjt. A. Killan.
7838 Pte. J. McEwen.
53896 Pte. T. Muir.
714 Pte. (Acting Cpl.) W. Parry.
81113 Pte. A. Petrie.
42062 Serjt. (Acting Serjt.-Major) W. J. Post.
39642 Pte. H. C. Prescott.
3061 Pte. S. Price.
38401 Lance-Cpl. W. Purves.
68333 Pte. F. M. Rackham.
91687 Pte. S. R. J. Rattey.
20551 Pte. M. Reed.
33170 Pte. W. H. Reid.
78760 Pte. T. Richardson.
74364 Pte. G. V. Snell.
29234 Pte. E. Spencer.
43171 Pte. W. E. Strickland.
64087 Cpl. (Acting Serjt.) A. Swindall.
2368 Pte. L. Symons.
58470 Pte. (Acting Serjt.) C. F. M. Taylor.
73611 Pte. E. Taylor.
37650 Lance-Cpl. J. W. Taylor.
46510 Serjt. G. B. Trim.
45389 Pte. (Acting Cpl.) L. O. Walford.
3782 Pte. (Acting Lance-Cpl.) J. R. Wells.
55005 Pte. W. J. Whittaker.
30345 Pte. A. H. Williams.
90134 Serjt. A. M. Wilson.
20514 Pte. J. H. Woodward.

(Supplement to the *London Gazette*, dated March 13, 1918.)

89018 Pte. E. Airey.
45507 Pte. A. Ansell.
90014 Pte. E. Bell.
47037 Qmr.-Serjt. (Acting Serjt.-Major) H. C. Bell.
74767 Pte. W. E. Bennellick.
22667 Pte. L. Birkby.
6474 Pte. E. C. Bishop.
33747 Pte. (Acting Serjt.) G. S. Blow.
74440 Pte. E. C. Callard.
41206 Lance-Cpl. S. J. Clarke.
19731 Pte. A. Clements.
47223 Pte. A. Clifton.
71908 Pte. J. Cowan.
5313 Pte. A. W. Crowther.
16979 Serjt. (Acting Staff-Serjt.) R. V. V. Egan.
55285 Serjt. R. Fallowfield.
53352 Pte. D. Farnan.
61974 Pte. D. Fielder.
25133 Pte. J. Fielding.
71655 Pte. (Acting Cpl.) W. H. Folley.
9607 Cpl. J. Fowler.
71816 Lance-Cpl. C. E. Francis.
78920 Pte. T. H. Gibson.
32209 Pte. W. Guthrie.
39891 Pte. H. J. Harding.
47431 Pte. H. Heath.
71954 Pte. H. Hewson.
76127 Pte. W. Holden.
75076 Pte. J. H. Holdsworth.
4712 Pte. W. C. Holloway.
34680 Pte. (Acting Serjt.) G. E. Hughes.
69566 Pte. W. E. Jackson.
69320 Pte. J. Kehoe.
51292 Serjt. W. C. A. Laing.
9680 Pte. A. Larking.
75141 Pte. W. Laws.
47522 Pte. D. Lochray.
45453 Pte. J. Masters.
41183 Pte. J. E. Mitchell.
47040 Staff-Serjt. D. Moffatt.
64558 Pte. A. D. Murray.
75030 Pte. J. Newman.
90698 Pte. F. G. Paul.
46538 Pte. (Acting Cpl.) D. Philip.
3134 Pte. A. Pirie.
39680 Serjt. E. A. Rees.
54889 Cpl. A. E. Reese.
75014 Pte. A. Rogerson.
6726 Cpl. (Acting Serjt.) W. S. Salter.
54658 Pte. J. Savage.
47468 Pte. W. Short.
73193 Pte. (Acting Lance-Cpl.) J. T. Smith.
53120 Pte. R. W. Southard.
64670 Pte. (Acting Cpl.) J. H. Stewart.
54325 Pte. R. Strickland.
11636 Pte. J. Supple.
3137 Pte. A. C. Swan.
38000 Pte. J. G. Thompson.
66583 Pte. A. B. Turner.
18886 Pte. P. Walsh.
90005 Pte. W. Warren.
64481 Pte. (Acting Lance-Cpl.) A. J. Watts.
71968 Pte. (Acting Cpl.) P. G. Williams.
64066 Pte. (Acting Cpl.) J. C. Wood.

(Supplement to the *London Gazette*, dated March 19, 1918.)

88239 Pte. A. Anderson.
5995 Pte. (Acting Serjt.) A. B. Barsby.
70135 Pte. J. A. Bebelman.
1703 Pte. W. Breeds.
30784 Pte. J. H. Bridge.
20038 Pte. A. J. Brockman.
103662 Pte. C. E. Buzan.
80401 Pte. C. H. Cooper.
68490 Pte. H. Cunliffe.
33542 Serjt. S. A. Fitch.
47854 Pte. S. Golding.
2298 Pte. J. Greene.
32620 Cpl. E. J. Ireson.
23832 Pte. J. G. Moore.
115 Pte. (Acting Lance-Cpl.) H. T. Murrell.
42250 Pte. E. Newman.
37163 Pte. M. O'Shea.
62948 Pte. (Acting Lance-Cpl.) J. Petrie.
8154 Pte. L. Stones.
44893 Pte. H. Walker.
47519 Pte. W. H. Wood.

(Supplement to the *London Gazette*, dated April 2, 1918.)

30825 Pte. C. Bull.
101731 Pte. G. Glaze.
102037 Pte. A. C. Goodwin.

(Supplement to the *London Gazette*, dated April 10, 1918.)

223 Serjt. (Acting Staff-Serjt.) W. Peake.
21835 Pte. W. N. Hobday.

(Supplement to the *London Gazette*, dated April 25, 1918.)

38112 Pte. A. Coad.
32763 Pte. J. W. Flower.
65201 Pte. F. B. Hands.
38161 Pte. G. F. Harris.
37479 Pte. W. Jackson.
68445 Pte. J. B. Jones.
37475 Pte. H. S. Lilley.
37546 Pte. C. W. Linscott.
92903 Pte. A. J. G. Mackie.
90768 Pte. H. E. McIlroy.

BAR TO MILITARY MEDALS.

His Majesty the King has been graciously pleased to approve of the award of a Bar to the Military Medal to the undermentioned Non-commissioned Officers and Men :—

(Supplement to the *London Gazette*, dated February 23, 1918.)

42093 Pte. (Acting Lance-Cpl.) E. J. Trim. (M.M. gazetted August 23, 1916.)
57417 Serjt. J. McL. Donald. (M.M. gazetted November 16, 1916.)
6434 Cpl. (Acting Lance-Serjt.) T. Waterman, D.C.M. (M.M. gazetted December 9, 1916).
65457 Cpl. (Acting Serjt.) B. W. Gunn. (M.M. gazetted June 18, 1917.)
46951 Cpl. H. Scandrett. (M.M. gazetted July 9, 1917.)
38024 Cpl. (Acting Serjt.) C. E. Brooker. (M.M. gazetted July 18, 1917).
57780 Serjt. T. Wood. (M.M. gazetted March 12, 1917.)
70884 Pte. W. Booth. (M.M. gazetted December 17, 1917.)

(Supplement to the *London Gazette*, dated March 13, 1918.)

66354 Pte. (Acting Serjt.) H. W. Dutton. (M.M. gazetted February 19, 1917.)
47455 Pte. L. J. Fulljames. (M.M. gazetted June 18, 1917.)

(Supplement to the *London Gazette*, dated March 19, 1918.)

669 Cpl. (Acting Serjt.) T. A. Marlborough, D.C.M. (M.M. gazetted August 10, 1916.)
47639 Pte. J. Limer. (M.M. gazetted November 2, 1917.)

(Supplement to the *London Gazette*, dated April 10, 1918.)

58097 Pte. (Acting Staff-Serjt.) A. J. Tait. (M.M. gazetted December 9, 1916.)

MERITORIOUS SERVICE MEDALS.

His Majesty the King has been graciously pleased to approve of the award of the Meritorious Service Medal to the undermentioned Man for gallantry in the performance of Military duty:—

(Supplement to the *London Gazette*, dated December 17, 1917.)

1748 Pte. M. Doyle.

His Majesty the King has been graciously pleased to award the Meritorious Service Medal to the undermentioned Warrant Officers, Non-Commissioned Officers and Men, in recognition of valuable services rendered with the Armies in the Field during the present War:—

(Supplement to the *London Gazette*, dated March 13, 1918.)

60208 Pte. (Acting Lance-Serjt.) G. W. Beach.
17759 Qmr.-Serjt. (Temp. Serjt.-Major) J. Black.
11236 Serjt. B. A. Embein.
5049 Pte. A. Kellett.
18656 Staff.-Serjt. (Acting Serjt.-Major) H. G. Maywood.

HONOURS AND REWARDS.

The following are among the Decorations and Medals awarded by the Allied Powers at various dates to the British Forces for Distinguished Services rendered during the course of the Campaign.

His Majesty the King has given unrestricted permission in all cases to wear the Decorations and Medals in question.

DECORATION AND MEDAL CONFERRED BY HIS MAJESTY THE KING OF SERBIA.

(Supplement to the *London Gazette*, dated October 3, 1917.)

Silver Medal.

101928 Pte. W. Blackett. | 74917 C. Brewer. | 26029 W. B. Whitbread.

DECORATION AND MEDAL CONFERRED BY HIS MAJESTY THE KING OF ITALY.

(Supplement to the *London Gazette*, dated March 25, 1918.)

Silver Medal for Military Valour.

106120 Pte. F. France.

DECORATION CONFERRED BY HIS MAJESTY THE KING OF THE BELGIANS.

(Supplement to the *London Gazette*, dated April 15, 1918.)

Décoration Militaire.

19007 Staff-Serjt. (Acting Qmr.-Serjt.) J. R. Dare | 7705 Pte S. A. Phillips.

DECORATION AND MEDAL PRESENTED BY THE PRESIDENT OF THE FRENCH REPUBLIC.

(Supplement to the *London Gazette*, dated April 18, 1918).

Croix de Guerre.

12261 Qmr.-Serjt. (Acting Serjt.-Major) J. E. Green. | 63640 Pte. H. C. Buckham.

The King has been graciously pleased to award the Decoration of the Albert Medal in Gold to 49809 Pte. (Acting Lance-Cpl.), J. Collins, Royal Army Medical Corps, in recognition of his gallant action in saving life in the following circumstances:—

On November 11, 1917, near an advanced dressing station in France a lunatic soldier escaped from his escort and ran away along a trench. Collins ran after him, and when he got near him the man threatened to throw a bomb at him. Collins closed with the man, who then withdrew the pin from the bomb and let it fall in the trench. In an endeavour to save the patient and

two other soldiers who were near, Collins put his foot upon the bomb, which exploded killing the lunatic and injuring Collins severely, fortunately the two soldiers were not hurt. Collins, who could easily have got out of the way, ran the gravest risk of losing his life in order to save others.

(The *London Gazette*, No. 30453, dated January 1, 1918.)

The King has been graciously pleased to confer the Decoration of the Albert Medal upon 70270 Pte. S. A. Bodsworth, Royal Army Medical Corps.

The following is an account of the services in respect of which the decoration has been conferred :—

On April 10, 1917, His Majesty's hospital ship "Salta" was sunk in Havre Roads. His Majesty's ship "Druid" proceeded to render assistance, and got alongside a swamped boat of the "Salta." All the occupants of the boat were rescued except a hospital Sister and Pte. Bodsworth. The former was so exhausted that she was unable to hold the ropes thrown to her, and eventually became unconscious. Although he might have been rescued Pte. Bodsworth persisted in remaining in the boat with the sister, and, after she had fallen overboard and had been hauled back again, he finally succeeded in placing a line round her body, by means of which she was hauled on board the "Druid." Very considerable risk was incurred by Pte. Bodsworth in rendering the service on account of the rough sea which prevailed at the time.

(The *London Gazette*, No. 30472, dated January 11, 1918.)

MENTIONED IN DISPATCHES.

The names of the following Non-Commissioned Officers and Men were mentioned in the Dispatch from Major-Gen. A. R. Hoskins, C.M.G., D.S.O., late Commander-in-Chief, East African Force :—

(Supplement to the *London Gazette*, dated March 7, 1918).

50899 Cpl. (Acting Serjt.) F. Bray.
36708 Pte. J. Brockless.
6893 Pte. A. Chubb.
60272 Pte. J. O. Gray.
36717 Pte. E. Iredale.
36719 Pte. W. Jackson.
1643 Serjt. (Acting Staff-Serjt.) F. H. Mattock.
1375 Serjt. H. Shipton.
36729 Pte. J. Sidebottom.
19792 Staff-Serjt. H. A. Baigent.
19634 Cpl. J. E. Kelliher.
670 Pte. C. M. Bergin.
12588 Staff-Serjt. J. Meason.
63131 Pte. H. Birchall.
68999 Pte. E. Ainscow.
54514 Pte. P. A. Mudd.
4569 Serjt. L. Richardson.

The names of the following Warrant Officers, Non-Commissioned Officers and Men were mentionedin the Dispatch from Lieut.-Gen. Sir Stanley Maude, K.C.B., Commanding-in-Chief, Mesopotamia Expeditionary Force :—

(Supplement to the *London Gazette*, dated March 12, 1918.)

75963 Pte. G. Ambler.
34007 Qmr.-Serjt. G. C. Beśter.
35737 Cpl. J. B. Brown.
16317 Pte. S. Davenport.
97906 Pte. (Acting Lance-Cpl.) W. Drummond.
27348 Serjt. W. Greenwood.
954 Serjt. H. C. Hallett.
23542 Serjt. A. E. Hughes.
14926 Serjt.-Major W. H. G. Hunt.
4435 Pte. J. G. Hunter.
32621 Pte. (Acting Serjt.) A. Johnson.
25648 Serjt. J. H. Jones.
24351 Pte. W. P. Kelly.
12002 Staff-Serjt. (Acting Serjt.-Major) W. J. Knee.
69958 Serjt. (Acting Staff-Serjt.) H. Latter.
17857 Qmr.-Serjt. (Acting Serjt.-Major) A. E. Macklen.
751 Staff-Serjt. (Acting Qmr.-Serjt.) A. J. Milne.
76141 Pte. J. E. Price.
97911 Pte. J. Rudd.
24681 Serjt. (Acting Staff-Serjt.) W. Smith.
35559 Pte. (Acting Serjt.) E. G. Tilt.
70345 Pte. W. H. Wheele.

The names of the following Warrant Officer, Non-commissioned Officers and Men of the Royal Army Medical Corps were mentioned in the dispatch from Field-Marshal Sir Douglas Haig, K.T., G.C.B., G.C.V.O., K.C.I.E., Commander-in-Chief of the British Armies in France, published in the Supplement to the *London Gazette*, dated May 25, 1918 :—

77055 Serjt. G. W. Ames.
19336 Cpl. (Acting Staff-Serjt.) A. Barnes.
13338 Serjt.-Major H. S. Boxshall.
42527 Pte. (Acting Cpl.) R. H. Bradbury.
71956 Pte. (Acting Serjt.) J. W. Briggs.
16756 Staff-Serjt. (Acting Qmr.-Serjt.) N. W. Brown.
40423 Pte. (Acting Serjt.) F. J. Burgess.
62700 Serjt. F. E. Buxton.
18061 Staff-Serjt. (Acting Serjt.-Major) W. Cairns.
48925 Pte. (Acting Cpl.) A. E. Channing.
48097 Pte. A. Chave.
61883 Cpl. (Acting Serjt.) E. G. Clegg.
38125 Cpl. (Acting Serjt.) A. C. Darbyshire.
65323 Pte. (Acting Serjt.) D. T. Davidson.
27943 Pte. A. Dickinson.
53674 Cpl. (Acting Qmr.-Serjt.) H. Duke.
90487 Pte. (Acting Cpl.) S. A. Dyer.
77071 Pte. (Acting Serjt.) H. Evans.
19688 Staff-Serjt. (Acting Serjt.-Major) T. V. Falkingham.

15312 Serjt. G. Gillespie.
54843 Cpl. R. B. Graham.
71738 Pte. T. Hacking.
89674 Pte. J. Hadfield.
17212 Pte. (Acting Cpl.) F. Haskell.
90454 Staff-Serjt. A. Hay.
63912 Serjt. (Acting Staff-Serjt.) D. Jeffreys.
48311 Serjt. G. J. Jones.
54078 Serjt. (Acting Qmr. Serjt.) W. Keighley.
54640 Serjt. (Acting Qmr.-Serjt.) H. Kirwan.
1659 Pte. (Acting Cpl.) J. Loram (M.M.).
17632 Qmr.-Serjt. H. C. A. Lunn.
45969 Serjt. G. Mackay.
32950 Pte. T. McWhannel.
54443 Serjt. H. Mellor.
16397 Staff-Serjt. W. G. Mills.
46711 Pte. J. Monaghan.
640 Pte. A. Nixon.
2278 Pte. I. Parker.
75280 Serjt. S. R. Paskin.
19126 Serjt. (Acting Serjt.-Major) F. H. Perkins.
10031 Pte. W. Penman.
32964 Serjt. (Acting Staff-Serjt.) F. E. Preston.
41193 Pte. J. Rainey.
59112 Pte. (Acting Cpl.) L. Richards.
69111 Pte. (Acting Cpl.) M. H. Rowe.
37022 Cpl. J. Simpson.
76432 Cpl. (Acting Lance-Serjt.) W. C. Smith.
8861 Serjt. E. Steffens.
5731 Pte. (Acting Cpl.) T. Thorne.
2276 Pte. (Acting Cpl.) D. Torrance.
35182 Pte. H. Stansfield.
15967 Serjt. W. T. Tringham.
58655 Cpl. F. Turner.
5134 Serjt. A. Vaughan.
72533 Pte. (Acting Lance-Cpl.) F. A. Watson.
90437 Pte. (Acting Lance-Cpl.) J. E. Williams.
12185 Staff-Serjt. (Acting Qmr.-Serjt.) A. S. Willis.

BROUGHT TO NOTICE.

The names of the undermentioned Warrant Officers, Non-commissioned Officers and Men, Royal Army Medical Corps, have been brought to the notice of the Secretary of State for War for valuable services rendered in connexion with the War:—

(War Office, March 13, 1918.)

26183 Serjt. (Acting Staff-Serjt.) F. Wills.
1848 Staff-Serjt. (Acting Serjt.-Major) A. V. Martins.
2242 Cpl. J. Thomson.
50225 Pte. (Acting Cpl.) H. Ackroyd.
14461 Serjt.-Major A. Baker.
26 Serjt. (Acting Qmr.-Serjt.) F. Bax.
58577 Staff-Serjt. (Acting Serjt.-Major) W. A. Browne.
15671 Qmr.-Serjt. (Acting Qmr.) R. M. Cole.
50965 Pte. A. Davis.
5171 Serjt. (Acting Serjt.-Major) W. E. L. Eason.
18613 Temp. Serjt.-Major C. F. Grant.
44987 Serjt. (Acting Qmr.) J. W. Griffiths.
15183 Qmr.-Serjt. (Acting Serjt.-Major) A. V. Heggie.
19867 Pte. (Acting Serjt.) W. S. Hughes.
53243 Serjt. (Acting Serjt.-Major) W. King.
12058 Serjt.-Major A. W. Pettley.
44071 Serjt. (Acting Serjt.-Major) H. Randall.
52898 Pte. (Acting Serjt.) T. Scott.
43081 Pte. (Acting Serjt.) A. A. Smith.
12582 Serjt.-Major J. Whiting.

PROMOTIONS.

The following promotions to complete War Establishment will take effect from the dates specified:—

To be Quartermaster-Serjeants.

Dated February 21, 1918. 20698 Staff-Serjt. G. Rothwell, 17022 Staff-Serjt. A. R. Weaver.
Dated April 2, 1918.—17542 Staff-Serjt. R. Colgan.
Dated April 26, 1918.—11741 Staff-Serjt. H. Hudson.
Dated May 1, 1918.—17521 Staff-Serjt. H. G. Parsons.

To be Staff-Serjeants.

Dated February 21, 1918.—73 Serjt. F. Ellard, 1051 Serjt. W. H. Davey.
Dated March 8, 1918.—1974 Serjt. C. D. Ferguson (M.M.).
Dated April 2, 1918.—1919 Serjt. F. H. Vyse.
Dated April 6, 1918.—1302 Serjt. J. Jack.
Dated April 26, 1918.—1344 Serjt. W. C. Shelley.
Dated May 1, 1918.—1475 Serjt. W. J. Bamford.

To be Serjeants.

Dated February 21, 1918.—20672 Cpl. S. Whitehead, 17557 Cpl. J. F. Starie.
Dated February 25, 1918.—19591 Cpl. P. L. Rolfe.
Dated March 8, 1918.—2029 Cpl. F. Robinson (M.M.), 4451 Cpl. C. K. Davis.
Dated March 24, 1918.—4684 Cpl. J. McEnaney.
Dated March 26, 1918.—4738 Cpl. G. L. Dell.
Dated March 27, 1918.—4870 Cpl. S. Poules, 4863 Cpl. H. G. Haines.
Dated April 2, 1918.—4879 Cpl. C. W. Barlow.
Dated April 6, 1918.—4898 Cpl. W. H. Wicken.
Dated April 26, 1918.—4917 Cpl. J. A. Chilcott.
Dated May 1, 1918.—4942 Cpl. A. McCombie.
Dated May 3, 1918.—7407 Cpl. C. Rich.
Dated May 23, 1918.—21 Cpl. T. Keech.
Dated May 24, 1918.—1483 Cpl. C. Licence.

To be Corporals.

Dated February 15, 1918.—12536 Pte. B. Bethell, 2484 Pte. W. A. Last.
Dated February 20, 1918.—17277 Pte. R. N. Knowles.
Dated February 21, 1918.—18020 Pte. C. A. Barnes, 2690 Pte. W. H. Hamer.
Dated February 25, 1918.—4152 Pte. P. Wild.
Dated February 27, 1918.—19101 Pte. W. Flaxman, 19103 Pte. H. G. Noble, 6507 Pte. F. Robinson, 4185 Pte. B. Cuffley.
Dated March 2, 1918.—5632 Pte. W. P. Barsby, 19296 Pte. E. T. J. Owen.
Dated March 8, 1918.—4977 Pte. W. Wilson (D.C.M.).
(In accordance with Corps Order No. 17 of this date.)
Dated March 8, 1918.—19818 Pte. J. G. Deakin.
Dated March 23, 1918.—18996 Pte. A. Biggs.
Dated March 24, 1918.—128 Pte. G. Stephens.
Dated March 26, 1918.—1642 Pte. E. Jordan.
Dated March 27, 1918.—20589 Pte. W. J. Davis.
Dated April 2, 1918.—20784 Pte. W. Kelsall (D.C.M.).
(In accordance with Corps Order No. 17 of this date.)
Dated April 6, 1918.—12156 Pte. W. Matchin.
Dated April 10, 1918.—960 Pte. P. H. Higgins.
Dated April 21, 1918.—988 Pte. E. Lord.
Dated April 22, 1918.—20702 Pte. H. Dunn.
Dated April 23, 1918.—20796 Pte. H. Greenwood.
Dated April 26, 1918.—20151 Pte. E. Jones.
Dated May 1, 1918.—6417 Pte. R. B. Evans.
Dated May 3, 1918.—20014 Pte. J. R. Latus.
Dated May 23, 1918.—7353 Pte. C. A. G. Harris.

These promotions are subject to the conditions laid down in paragraph 35, Standing Orders for the Royal Army Medical Corps, 1914.

TEMPORARY PROMOTIONS.

The following temporary promotions, to complete War Establishment, will take effect from the date specified :—

To be Temporary Serjeant-Majors.

Dated March 16, 1918.—Quartermaster-Serjeants : 16053 S. M. Gawthorne, 18415 A. Bell, 11807 J. Levey, 14770 A. Buckner, 15544 E. J. Barnes, 17633 R. Sproule (M.M.), 15843 W. Stokes, 16205 T. Gregson, 16569 E. Attfield, 14326 W. P. S. Morman, 18453 F. A. Philbrook, 17748 C. H. Dissent, 18216 R. G. Leggett (D.C.M.), 18976 E. G. Robinson, 18337 C. Leaker, 18432 G. F. Pearce, 18445 J. E. Crawley, 17928 W. S. Toye, 18385 F. W. Coupland, 18645 C. E. Rouse, 12461 P. F. Cook, 15288 W. C. Prince (M.M.), 15591 J. Harris, 15813 A. V. Heggie, 18948 E. Moore, 15671 R. W. Cole, 15483 E. Sharp, 17057 M. Ward, 17736 J. D. Keeble, 18969 E. Gray, 13032 T. Kerr, 12989 E. G. W. Barnes, 16678 J. E. March, 11614 W. H. Howard, 18222 A. Dady, 14761 W. Robertson, 12819 W. H. Riches, 17573 C. Harlen, 13035 G. V. Chandler, 17358 C. Ennor, 12709 H. J. Ford, 17091 J. Moore, 19320 H. A. Richie (M.M.), 103 G. P. Steer, 12065 A. A. E. McKnight.

These temporary promotions are subject to the conditions laid down in paragraph 35 Standing Orders for the Royal Army Medical Corps, 1914.

QUEEN ALEXANDRA'S IMPERIAL MILITARY NURSING SERVICE.

The undermentioned Non-commissioned Officers have been selected for admission to Q.A.I.N.S., with increased pay at sixpence (6d.) a day in accordance with Article 861, Royal Warrant for pay, from the date specified :—

Dated February 18, 1918.—4890 Cpl. J. Tumilty vice Staff-Serjt. F. J. R. Baiden.
Dated March 25, 1918.—1072 Serjt. H. A. French vice Staff-Serjt. H. A. Baigent.

NURSING SECTION.

The following appointments to the Nursing Section of the Corps will take effect from the dates specified :—

Dated January 14, 1918.—12696 Pte. D. C. H. Knight.
Dated January 15, 1918.—7748 Pte. F. Hall.
Dated January 22, 1918.—20010 Pte. J. McDermott, 3125 Pte. A. J. Trimby, 1880 Pte. C. R. Seitz.
Dated February 2, 1918.—2373 Pte. C. C. Hope, 20183 Pte. W. Taylor, 2508 Pte. D. Douglas.
Dated February 26, 1918.—322 Pte. J. Donnelly.
Dated February 28, 1918.—12567 Pte. R. B. Wiles.
Dated March 9, 1918.—4088 Pte. C. A. Banyard, 7617 Pte. C. A. F. Dunglison.
Dated March 13, 1918.—2603 Pte. G. Oldham, 3184 Pte. J. T. Morris.
Dated March 20, 1918.—6194 Pte. G. R. Powell, 11255 Pte. W. Reece, 259 Pte. S. Magill.
Dated March 22, 1918.—7725 Pte. H. Watts.
Dated March 23, 1918.—10331 Pte. C. S. Waters, 10172 Pte. H. O'Neill.

Dated March 30, 1918.—3509 Pte. D. Boomer, 6725 Pte. S. Bowers.
Dated April 9, 1918.—3937 Pte. W. J. Wilkins.
Dated April 22, 1918.—19204 Pte. G. Kell, 3363 Pte. A. S. Bird, 1846 Pte. G. R. Lawson, 870 Pte. P. McGrail.
Dated April 26, 1918.—728 Pte. J. Brown.
Dated May 11, 1918.—343 Pte. P. Garry, 6085 Pte. G. Cousins, 2470 Pte. F. Buckingham.
Dated May 17, 1918.—5326 Pte. W. Smith, 5624 Pte. E. C. Stachini.

ADVANCEMENT OF PRIVATES—CORPS PAY.

The following advancement in rate of Corps Pay will take effect from June 1, 1918 :—

To be Advanced to the Third Rate (at 8d.).

As Orderlies.

6076 J. Winterton, 3408 G. Sheils, 10117 J. Elliott, 7348 R. H. Warrell, 4639 F. Beesley, 5615 A. G. Cook, 4576 R Davies, 4388 D. P. Humphris, 8757 F. A. Noon, 10120 W. J. Bradfield, 7686 T. Hasell, 5279 E. F. Millgate, 6014 W. Clark, 657 F. T. Bone, 2251 B. H. Cooke.

To be Advanced to the Fourth Rate (at 6d.).

As Orderlies.

11246 G. Nicholson, 7646 G. A. Jordan, 7462 J. G. McNab, 4768 E. Wright, 20400 J. C. Gray, 5101 A. L. Murray, 860 A. H. Mills, 1676 F. Goodge, 1811 R. H. Grant, 1829 J. J. Oxley, 20118 R. Hunt, 12614 H. A. Whitby, 1638 S. Faulkner, 2657 D. Doyle, 12645 H. Sallows, 1377 G. Taylor, 7602 W. Vaughan, 20403 P. Boulton, 12443 W. H. Hall, 20049 F. Bailey, 12615 D. MacDougall, 4785 J. Lancaster, 2077 T. H. Messer, 4618 O. C. Dormon, 1785 A. W. Keen, 11265 G. Smith, 11270 J. H. Tonks, 11903 C. Thomas, 1717 M. Brady, 11374 R. Duckett.

These advancements are subject to the conditions laid down in paragraph 35 Standing Orders, for the Royal Army Medical Corps, 1914.

SANITARY ORDERLIES.

The following Private is advanced to the Fourth Rate of Corps Pay at 6d. as Sanitary Orderly from the date specified .—
Dated March 25, 1918.—4634 Pte. H. Green.

BUGLERS.

The undermentioned boys are appointed Buglers from May 24, 1918, inclusive :—
12722 G. H. Vickers, 12729 T. J. Daly.

REPOSTING TO CORPS.

The undermentioned Non-commissioned Officer rejoined the Corps from the date specified :—
Dated May 9, 1918.—15776 Qmr.-Serjt. H. G. Blackman, from Colonial Government.

PROMOTION CANCELLED.

The promotion to the rank of Corporal of 1999 Pte. A. P. Pullen, dated March 7, 1918, is hereby cancelled.

ARMY MEDICAL OFFICERS' WIDOWS AND ORPHANS FUND.

SUMMARY OF THE PROCEEDINGS OF A QUARTERLY MEETING OF THE COMMITTEE HELD AT THE ROYAL ARMY MEDICAL COLLEGE ON JULY 15, 1918.

Present :—

Deputy Surg.-Gen. W. G. Don, Vice-President, in the Chair.
Surg.-Gen. W. S. M. Price, Vice-President.
Surg.-Gen. Sir H. R. Whitehead, K.C.B.
Major-Gen. J. J. Gerrard, C.B.
Col. Sir W. B. Leishman, K.C.M.G., C.B., F.R.S., K.H.P.
Lieut.-Col. G. S. Mansfield.
Major W. C. Smales, D.S.O.

(1) The Minutes of the Meeting of April 15, 1918, were read and confirmed.

(2) The deaths of the following members were reported : Major E. L. McSheehy, died May 1, Surg.-Gen. C. Hervé Girand, died May 10, and their widows were placed on the list of annuitants each receiving the gratuity at the £200 rate.

(3) The Secretary reported that £2,500 out of cash surplus had been invested in 5 per cent National War Bonds 1928, as authorized at the last meeting.

(4) The Secretary reported that sixty-nine officers had been gazetted to Regular Commissions in the Corps on June 1, 1918, and that a notice had been sent to each of them explaining the benefits offered by the Society and the terms of membership. Under a resolution passed at the

last meeting these officers are eligible for married membership at the present extra war charge in addition to the normal annual subscription, but as this resolution only covered the period up to the date of the present meeting it was proposed by Sir Hayward Whitehead, seconded by Sir William Leishman, and carried unanimously:—

"That such officers as may be gazetted to Regular Commissions in the Corps up to the date of the next following meeting of the Committee be eligible for admission as married members of this Society at the present extra war charge of 25 guineas per annum, in addition to the normal annual subscription as laid down in the Rules. Also, that all Regular officers of the Corps may be admitted as unmarried members at the annual subscription of £2; provided that if any such unmarried member who has joined the Society since the outbreak of war be transferred to the married list before it ends, he shall be liable for any additional war charge which may be in force for married members at the time of his marriage."

(5) With reference to the appointment of a Consulting Actuary in the place of the late Mr. Andras, the Secretary reported the results of the inquiry which he had made, and submitted a letter from the Hon. Treasurer, Sir James McGrigor, strongly recommending the appointment of Mr. R. R. Tilt, Actuary to the General Reversionary and Investment Company. No other recommendations were made by members. After consideration it was proposed from the chair and carried unanimously that Mr. Tilt be asked if he will accept the appointment on the same terms as those on which the late Mr. Andras held it, viz.—a fee of 50 guineas for the quinquennial valuations and an annual fee of 10 guineas for advice on such questions as may from time to time arise.

(5A) It was then proposed by Sir William Leishman, seconded by Lieut.-Col. Mansfield and carried unanimously:—

"That if Mr. Tilt accept the appointment he be asked to report to the next meeting of the Committee as to whether it be possible to reduce the present extra war charge."

(6) A Trustee's receipt for payment having been made by the Secretary of his annual premium to the Guarantee Society was submitted.

(7) Payment of the Secretary's salary, office allowance and refund of petty cash expended for the quarter ended June 30 was sanctioned, and also of the printer's account, £11 5s.

NOTICE.

This Fund provides annuities of £50 a year during widowhood, to the widow of the marriage during which the subscription of a married member began. In the event of the death of the widow this annuity is continued to the children of such marriage until the youngest attain the age of 21 years. It also continues for their benefit, up to the same age, if the widow re-marries. Furthermore, should the wife of the subscriber predecease him, it will be optional for him to continue the subscription he had been paying as a married member, in order to provide an annuity similar to the above for the children of the marriage, until the youngest shall have attained the age of 21 years.

Provision is also made whereby a part of the surplus at any quinquennial valuation may be applied for the benefit of members, or their wives, or orphan children. Thus, by the appropriations of surplus at the valuations of December 31, 1910 and 1915, the prospective widows of first-class married members on the books at those dates, will receive, during this current quinquennium, £200 and £100 respectively at the death of their husbands, their annuities being also increased to the statutory limit of £52.

Examples of the rates of annual subscriptions are:—

Husband's age		Wife's age		Annual subscription
25	..	20	..	£13 8 5
30	..	27	..	£14 6 1
36	..	33	..	£16 17 2
46	..	40	..	£22 12 6
50	..	45	..	£24 9 5

The present extra war charge, which is subject to revision, is 25 guineas per annum, in addition to the normal annual subscription according to scale. Only Regular officers are eligible for membership.

Unmarried officers may become members by paying £2 yearly, and can thus reduce the rate of their subscriptions when married.

The Secretary will be glad to give any further information as to details.

J. T. Clapham,
Captain,
Secretary.

3, *Homefield Road,*
Wimbledon, S.W. 19.

ROYAL ARMY MEDICAL CORPS COMFORTS AND PRISONERS OF WAR FUND.

THE following is a fourth list of contribution from companies and units at home and abroad to our Prisoners of War Fund received up to the end of July, and I am requested by the Ladies' Committee to convey their most cordial thanks to all ranks for their continued support. The number of our prisoners unfortunately does not decrease, the total being now considerably over 800, and the cost of each parcel has increased to 10s., so it is hoped that all units may keep our requirements in mind and send us subscriptions as circumstances permit.

A monthly grant from Regimental Institutes would be most acceptable whatever the amount.

It should be noted that although it has been found more convenient for business reasons not to change the name of the Fund, the whole of the money received is expended *on prisoners of war only* and that no part of it goes to "comforts" for units in the field.

It is regretted that space does not admit of the individual subscriptions of officers and other friends being recorded, but they are most gratefully accepted and acknowledged separately by the Honorary Secretary.

E. M. WILSON,
Hon. Treasurer.

FOURTH LIST.

LIST OF COMPANIES AND UNITS AT HOME AND ABROAD CONTRIBUTIONS TO PRISONERS OF WAR FUND IN 1918.

May 14.			
No. 10 Field Ambulance (additional)	£5	0	0
40th Sanitary Section	2	15	0
13th Motor Ambulance Convoy	8	12	6
51st General Hospital	29	8	8
2nd Western General Hospital	2	10	0
25th Sanitary Section	5	8	0
R.A.M.C. Jamaica European and Native	5	0	0
28th General Hospital, Salonica	64	12	2
28th General Hospital, Salonica, Nursing Staff	16	6	10
63rd General Hospital	71	9	2
101st Field Ambulance	10	10	0
R.A.M.C. Officers' School of Instruction, Blackpool	46	7	0
35th Field Ambulance (additional)	1	0	0
47th Sanitary Section	1	0	0
Saint Ignatius Hospital, Malta	13	15	0
40th Stationary Hospital, Officers and other ranks	8	5	0
No. 18 General Hospital, Chicago, U.S.A.	39	8	4
98th Field Ambulance	6	0	0
53rd Field Ambulance	500 fr.		
3rd Training Battalion, Blackpool	5	0	0
5th Reserve Battalion, Scottish Rifles	2	0	0
6th Cavalry Field Ambulance	260 fr.		
R.A.M.C. Detachment, Tigne, Malta	9	11	6
No. 2 Field Ambulance, B.E.F., France	15	0	0
87th First West Lancs Field Ambulance	26	8	0
88th 1st East Anglian Field Ambulance	872 fr.		
89th 1st West Riding Field Ambulance	7	7	4
1/2nd West Riding Field Ambulance	395 fr.		
2nd Canadian General Hospital	2	0	0
(1,200 fr.)	44	0	0
96th Field Ambulance	£32	0	0
14th Field Ambulance	15	16	0
No. 12 Ambulance Train	12	0	0
47th General Hospital (additional)	6	12	0
No. 11 Casualty Clearing Station	27	0	0
No. 20 Casualty Clearing Station	5	0	0
62nd Field Ambulance	14	14	8
May 23.			
B Company 6th Training Battalion, Blackpool	2	10	7
1/3rd South Midland Field Ambulance	4	0	0
110th Field Ambulance	10	0	0
35th Company, Millbank	10	0	0
57th Field Ambulance	10	0	0
The Duchess of Westminster Hospital	2	0	0
62nd Casualty Clearing Station	25	16	4
No. 6 Casualty Clearing Station	41	13	0
No. 8 Stationary Hospital	57	10	8
No. 16 General Hospital (Philadelphia, U.S.A.)	3	11	2
51st Highland Casualty Clearing Station	20	0	0
58th Casualty Clearing Station	22	1	0
49th General Hospital, Salonica	10	0	0
60th General Hospital, Salonica	6	0	0
42nd Ambulance Train	2	10	0
No. 40th Casualty Clearing Station	4	0	0
Crpl. A. E. Ramsdale: Sale of Poem	6	10	0
R.A.M.C. School of Instruction, Blackpool (2nd contribution)	53	5	3
Late Crookham Training Centre	100	0	0
52nd General Hospital, Salonica	10	0	0
98th Field Ambulance	45	6	9
16th Company, R.A.M.C., Cork	2	19	6
72nd Sanitary Section	1	4	0
135th Field Ambulance	19	5	0
7th Training Battalion Blackpool	9	12	0
Military Hospital, Ghain Tuffieha, Malta	20	12	3
2nd Western General Hospital, Manchester	5	0	0

58th Field Ambulance	£6	0	0
June 4.			
61st General Hospital	5	5	0
Headquarters 75th Division. E.E.F.	2	0	0
2nd, 3rd, 4th, and 5th Ambulance Flotillas	1	18	0
52nd Field Ambulance (500 fr.)			
No.8ConvalescentDepot,Salonica	50	0	0
No. 25 General Hospital ..	28	12	0
Serjeants' Mess, 3rd Loyal North Lancashire Regiment.. ..	10	11	0
Imtarfa Military Hospital, Malta	10	0	0
51st Field Ambulance (500 fr.)			
18th Company Rochester Row..	20	0	0
19th Company, Chester	30	0	0
49th General Hospital	10	0	0
27th Ambulance Train	10	0	0
1st Training Battalion,Blackpool	5	0	0
June 7.			
14th Convalescent Depot(Officers)	18	18	0
44th Casualty Clearing Station..	6	7	0
147th Field Ambulance, Cairo ..	35	8	6
12th Stationary Hospital ..	16	10	0
Military Hospital, Prospect, Bermuda	2	0	0
43rd Casualty Clearing Station..	39	0	0
38th General Hospital, Salonica	25	0	0
95th Field Ambulance (Officers)	7	6	0
33rd Advance Depot Medical Stores, Warrant and N.C.O.s and men	2	15	0
61st Field Ambulance	22	0	0
55th Casualty Clearing Station..	4	0	0
38th Field Ambulance	16	16	0
No 2 Stationary Hospital ..	9	8	6
1/2nd South Midland Field Ambulance (T.F.)	10	0	0
32nd Stationary Hospital .. (1225.25 fr.)			
No. 20th Stationary Hospital Officers and Men	29	10	0
Military Hospital, Maryhill, Glasgow..	50	0	0
35thCompany,R.A.M.C.,London	10	0	0
Military Hospital, Prees Heath, Shropshire, Officers' Mess ..	5	5	0
June 14.			
Medical Officers' Chester War Hospital	9	3	0
53rd General Hospital	5	1	3
139th Field Ambulance.. ..	15	0	0
2/3rd East Lancs Field Ambulance (2nd contribution) ..	18	8	4
14th Battalion Tank Corps ..	18	15	0
12th Corps R.A.M.C. Officers, Wt. and N.C.O.s and Men ..	108	1	6
72nd General Hospital Serjeants' Mess .. .. (150 fr.)			
No. 12 Base Depot Medical Stores, Salonica	2	8	3
Citadel Hospital, Cairo, Serjeants' Mess	5	0	0
R.A.M.C. Detachment, Perham Down, Salisbury	3	0	0
165thCombined FieldAmbulance	4	10	0
4thTraining Battalion,Blackpool	7	0	0
June 21.			
77th Field Ambulance	30	0	0
3rd Training Battalion, Blackpool	£5	0	0
3rd Training Battalion, Blackpool, C and D Company ..	1	1	9
3rd Northern General Hospital Orderly Room	1	10	0
2/1st Highland Field Ambulance Anti Blues Concert	9	0	0
Staff of S.M.O. Barfleur, Officers, N.C.O.s and Men	26	15	9
Regimental Institutes, Netley..	25	0	0
No. 20 Motor Ambulance Convoy	7	7	0
June 25.			
30th Division B.E.F., France ..	50	0	0
The Medical Society of 59th Division	11	11	0
72nd Sanitary Section	1	5	0
64th Field Ambulance	39	17	0
R.A.M.C. School of Instruction (Officers), Blackpool	16	15	6
37th General Hospital	36	15	0
40th British General Hospital, Mesopotamia	75	4	11
R.A.M.C. Detachment, St. Helena	1	1	0
2nd, 3rd, 4th, and 5th Ambulance Flotillas (2nd donation) ..	3	6	8
47th General Hospital, Salonica	10	0	0
Officers' 64th Field Ambulance (further donation)	16	0	0
No. 15 Sanitary Section.. ..	3	0	0
41st General Hospital, Salonica	6	0	0
Lord Mayor of Liverpool's Shilling Fund	100	0	0
4th Southern General Hospital	23	2	0
2/3rd East Lancs Field Ambulance (3rd donation)	10	0	0
July 5.			
Officers and men 2/5th London Field Ambulance	15	10	0
19th Company R.A.M.C.,Chester (further donation)	20	0	0
12th St. Louis, U.S.A., General Hospital (2nd donation).. ..	10	0	0
71st General Hospital, Cairo (1,300 piastres)			
7thTrainingBattalion,R.A.M.C., Blackpool (further contribution)	15	5	1
Disembarkation Staff, Dover	17	14	10
8th Training Battalion, Blackpool	5	0	0
July 19.			
22nd Field Ambulance	33	7	0
R.A.M.C. Detachment, Bermuda	1	5	0
2/2nd North Midland Field Ambulance (further contribution)	7	6	0
Ambulance Barges No. 105 and 106	2	6	6
140th Field Ambulance.. ..	5	0	0
Pavilion General Hospital, Brighton	4	4	0
2/1st Highland Field Ambulance (T.F.)	11	0	0
133rd British General Hospital, Mesopotamia	10	0	0
Officers of the Connaught Hospital	16	2	0

Military Hospital, Gosport (two donations)	£1	19	9
Military Hospital, Blandford ..	25	0	0
Military Hospital, Blandford, Officers	5	0	0
Matron and Nursing Staff 133rd British General Hospital ..	2	2	5
4th General Hospital Tennis Tournament	10	10	0
July 19.			
44th Casualty Clearing Station (135.50 fr.)			
76th Casualty Clearing Station	£12	13	0
4thTraining Battalion,Blackpool	7	16	2
3rdTraining Battalion,Blackpool	6	9	0
38th Ambulance Train	6	12	0
July 25.			
16th General Hospital, Philadelphia, U.S.A. (2nd donation)..	18	7	0
146th Field Ambulance	22	9	4
4th Stationary Hospital (60 fr.)	2	4	3
3rd Loyal North Lancs Regiment, per Col. L. P. Maynard	102	6	0

"REVEILLE."

THE demand for the first number of the new Government quarterly review *Reveille* was so great that the first impression was exhausted a few days after publication, and many people were, consequently, unable to obtain their copies. The second impression, however, is now ready and the review can be obtained from H.M. Stationery Office, Imperial House, Kingsway, London, W.C. 2, or through any bookseller.

OBITUARY.

THE announcement of the sudden death of Major-Gen. W. G. Birrell through illness contracted on service is full of sadness to many of those who knew him throughout the thirty-seven years he spent on the active list. A sturdy Scot, his compact figure, fair complexion and kindly blue eye will remain in memory.

In private life his love of Scotland, of his rod and his gun were perhaps his outstanding characteristics. Always able and clear-headed, no officer had a higher sense of duty—for no labour deterred him, no rebuff dismayed him, if thereby he could carry through what he believed to be right and best for the well-being of the Army and for the care of the sick and wounded.

Born in 1859, Gen. Birrell was educated at the Academy and graduated at the University of Edinburgh. He joined the Service in 1881, served in the Sudan in 1885, again in Burma in 1886-7, in the Nile Campaign in 1898, and in the present War occupied the position of Director of Medical Services of the Mediterranean Expeditionary Force during the earlier operations in Gallipoli.

On his return to England he was appointed Deputy Director Medical Services of the Southern Command, an office of much labour and great difficulty in which he earned the just praise of his Commander-in-Chief. He continued to occupy this appointment until compelled to retire by ill-health a few months ago, and it cannot be doubted that his premature death was due to his self-sacrificing exertions.

His sturdy character, his strong opinions and his innate reticence sometimes obscured his worth and did not always find favour; so he left the Service, to which he had devoted his whole strength and his working life, without any of those honorific distinctions that a more facile disposition would most certainly have made his. But his memory will not suffer on that account in the hearts and minds of those who knew aright this loyal officer and kindly Scottish gentleman.

DEATH.

WARD.—At Aldershot, on August 30, 1918, Major William Alfred Ward, R.A.M.C., aged 50 years.

EXCHANGES, &c.

The charge for inserting Notices respecting Exchanges in the Royal Army Medical Corps is 5/- for not more than five lines, which should be forwarded by Cheque or P.O.O., with the notice, to Messrs. G. STREET and CO., Ltd., 8, Serle Street, London, W.C., not later than the 22nd of the month.

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50	4	0 4 6	0 1 10	6 0	2 1	4 10	1 2
	8	0 7 6	0 3 6				
	16	0 13 3	0 5 10				
100	4	0 6 0	0 3 1	7 10	3 11	6 7	2 5
	8	0 10 0	0 4 10				
	16	0 18 6	0 7 6				
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Notices.

EDITORIAL NOTICES.

The Editor will be glad to receive original communications upon professional subjects, travel, and personal experiences, etc. He will also be glad to receive items of news and information regarding matters of interest to the Corps from the various garrisons, districts, and commands at home and abroad.

All such Communications or Articles accepted and published in the "Journal of the Royal Army Medical Corps" will (unless the Author notified at the time of submission that he reserves the copyright of the Article to himself) become the property of the Library and Journal Committee, who will exercise full copyright powers concerning such Articles.

Matter intended for the Corps News should reach the Editor not later than the 15th of each month for the following month's issue. Notices of Births, Marriages, and Deaths are inserted free of charge to subscribers and members of the Corps. All these communications should be written upon one side of the paper only; they should by preference be type-written; but, if not, all proper names should be written in capital letters (or printed) to avoid mistakes, and be addressed: The Editor, "Journal of the Royal Army Medical Corps," 324, Adastral House, Victoria Embankment, E.C. 4.

The following publications have been received:—

British: The Medical Review, The Medical Journal of South Africa, The Medical Press, Proceedings of the Royal Society of Medicine, Journal of Tropical Medicine and Hygiene, Surgery, Gynæcology and Obstetrics, Guy's Hospital Gazette, St. Bartholomew's Hospital Journal, Tropical Diseases Bulletin, The Practitioner, The Middlesex Hospital Journal, The Hospital, Edinburgh Medical Journal, Transactions of the Society of Tropical Medicine and Hygiene.

Foreign: Bulletin of the Johns Hopkins Hospital, Rivista de la Sauidad Militar, Lyon Chirurgical, Office International d'Hygiène Publique, Archives de Médecine et Pharmacie Navales, Giornale di Medicina Militare, American Journal of Care for Cripples, United States Public Health Service, The Military Surgeon, The Journal of Infectious Diseases.

MANAGER'S NOTICES.

The Journal of the Royal Army Medical Corps is published monthly, six months constituting one volume, a volume commencing on 1st July and 1st January of each year.

The Annual Subscription is £1 (which includes postage), and should commence either on 1st July or 1st January; but if a subscriber wishes to commence at any other month he may do so by paying for the odd months between 1st July and 1st January at the rate of 1s. 8d. (one shilling and eightpence) per copy. (All subscriptions are payable in advance.)

Single copies can be obtained at the rate of 2s. per copy.

The Corps News is also issued separately from the Journal, and can be subscribed for at the rate of 2s. (two shillings) per annum, including postage. Subscriptions should commence from 1st July each year; but if intending subscribers wish to commence from any other month, they may do so by paying for the odd months at the rate of 2d. per copy. (All subscriptions are payable in advance.)

Officers of the Royal Army Medical Corps possessing Diplomas in Public Health, etc., are kindly requested to register their special qualifications at the War Office. Letters of complaint are frequently received from officers stating that their special qualifications have not been shown in the Distribution List which is published as a supplement to the Journal in April and October of each year. As, however, the particulars of this list are supplied from official sources, officers are reminded that unless the possession of Diplomas, etc., has been registered at the War Office, no entry of such qualifications can be recorded in the Distribution List.

Letters notifying change of address should be sent to the Hon. Manager, "Journal of the Royal Army Medical Corps," 25, Adastral House, Victoria Embankment, E.C. 4, and must reach there not later than the 20th of each month for the alteration to be made for the following month's issue.

It is requested that all Cheques or Postal Orders for Subscriptions to the Journal, Corps News, Reprints, etc., be crossed "Holt & Co.," and made payable to the "Hon. Manager, Journal R.A.M.C." and not to any individual personally.

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CONTENTS.

ORIGINAL COMMUNICATIONS. PAGE

Penetrating Wounds of the Chest. By Captain R. B. BLAIR, R.A.M.C., in collaboration with Major G. C. SHATTUCK, R.A.M.C. . . . 177

Some Musings of an Idle Man. By Colonel R. H. FIRTH . . . 193

The Late Appearance of Agglutinins in Paratyphoid A Fever. By Captain WM. MACADAM, R.A.M.C. 208

Dysentery—A Clinical Study. By Lieutenant-Colonel JOHN M. COWAN, R.A.M.C., and Captain HUGH MILLER, R.A.M.C. 217

CLINICAL AND OTHER NOTES.

On a Case in which a Machine-Gun Bullet was Embedded in the Wall of the Heart, with Observations on the Cardiac Movements of the Bullet during Systole and Diastole and the Translation Movements during Respiration and Changes in Bodily Position. By Colonel C. J. BOND, C.M.G., A.M.S., and Captain E. V. PHILLIPS, R.A.M.C., and W. JEVONS, M.Sc. . . 229

A Simple Method of X-ray Localization. By Captain D. B. MCGREGOR, R.A.M.C. 236

A Case of Suppurative Meningitis with Glycosuria, Simulating Diabetic Coma. By FRANK E. TAYLOR, M.D., B.S., M.R.C.P.Lond., F.R.C.S.Eng., D.P.H. Camb., and Captain W. H. MCKINSTRY, R.A.M.C. 237

Susceptibility to Cerebrospinal Meningitis in Relation to Age. By Captain ARTHUR COMPTON, R.A.M.C. 241

REPORT.

An Investigation into the Incidence of Albuminuria and Casts in British Soldiers during Training and the Relationship of this Condition to War Nephritis. By Captain H. MACLEAN, R.A.M.C. 245

REVIEWS 255